THE MARINE REVIEW

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SHIPPING COMBINE'S PROFITABLE YEAR.

It may be stated on definite authority that the annual report of the International Mercantile Marine, which will be issued about the middle of April or early in May, will show a surplus after fixed charges in excess of $4,000,000. The statement has not yet been fully completed and will not be for several weeks, but there is, it is stated, no question but what $4,000,000 will be the minimum. This compares with a deficit of $1,142,097 in 1904. In some quarters this will probably be regarded as a disappointing showing in view of the unprecedented prosperity that marked the year 1905 in this country. The explanation, however, as outlined in a confidential circular by J. P. Morgan & Co., syndicate managers, to members of the $50,000,000 bond syndicate is that it was not until September that the freight business became what may be termed active and that therefore the improvement in the freight situation covered only four months out of the twelve. It was, in fact, not until October that the steamers of the various lines began to go out "full."

The passenger business of the lines throughout the year was steady. The American line, for instance, brought this way 12,356 cabin passengers, against 11,111 in 1904, 10,560 in 1903 and 14,456 in 1902. The steerage arrivals, however, were only 27,106 in 1905, which compares with 34,684 in 1904, 16,081 in 1903 and 20,651 in 1902. The Atlantic Transport line brought 3,603 cabin passengers, which is about the same number as for several years past. The White Star line had a particularly satisfactory year so far as cabin business was concerned, and the Red Star line was fortunate both as to cabin and steerage. Following are figures for a series of years:

WHITE STAR, LIVERPOOL.

	Cabin	Third Class
1905	24,829	45,905
1904	23,911	57,863
1903	22,418	45,705
1902	18,402	40,225
1901	14,948	29,370

WHITE STAR, MEDITERRANEAN.

1905	3,117	17,611
1904	151	397

RED STAR, ANTWERP.

1905	11,376	59,432
1904	9,438	39,148
1903	8,866	54,726
1902	6,878	47,119
1901	5,559	31,003

This year the passenger business promises to be exceptionally active, but the company will have to compete with fine new ships of other lines. It will, however, have its own new steamer, the Adriatic, on its White Star service. This is a larger ship than the Baltic. It is understood that the question of ordering new steamers was discussed when Mr. Ismay was here, but that nothing definite was accomplished. The International Mercantile Marine has $25,000,000 bonds available for that purpose, and the question of new vessels will depend upon the opportunity for marketing bonds without interfering with securities already issued.

PREPAREDNESS FOR WAR.

"Preparation for modern naval warfare must be the work of peace," was the point made by Charles J. Bonaparte, secretary of the navy, who was the guest of honor at a banquet given in Chicago by the Swedish-American Central Republican Club. Secretary Bonaparte told the 700 banqueters of the progress made by the United States for the last forty years in building a navy and then outlined his ideas of the necessity of keeping our navy to the front among the world powers.

"We must keep our navy abreast of the times," said the secretary; "must have it ready at any moment to do its appointed work, and do this well. Those who think it can be made ready in a little while, and rest satisfied with this state of preparation, assume the gravest responsibility. A week, even a day, in these days of ocean cables and wireless telegraphy, is worth for the purpose of warfare, a month in the days of our fathers. If you wish the navy to be what it should be—safeguard and warrant of the country's security and honor—you must have a navy prepared for war at a moment's notice; and to have such a navy we must use, and not waste, the days of peace. There is no use closing our eyes to the fact that this means spending money, and no little money. The expenses of the navy will grow as the navy grows, and we cannot have a good thing unless we are willing to pay for it. While human nature and human society remain what they are, war will be always possible and sometimes unavoidable, and to preserve peace we should be, and be known to be, ever ready at a moment's notice to meet an appeal to arms."

COMMISSIONER SMITH ON THE VALENCIA DISASTER.

Herbert Knox Smith, deputy commissioner of the bureau of corporations at Washington, has recently arrived from Seattle at San Francisco. At the former place he has been conducting a federal investigation of the steamship Valencia, as the personal representative of President Roosevelt. Associated with him on the board were L. O. Murray, and Capt. W. T. Burwell, of the Puget Sound navy yard. Mr. Smith was very unwilling to discuss the findings of the board. "In fact," he said, "we have come to no definite conclusion as to where the blame lies, having had no opportunity to thoroughly examine the evidence we took. We examined over fifty persons, and took over 3,000 pages of testimony, the most of which has been filed until we can get at it systematically. The most important thing accomplished by the board, in my opinion, was a thorough investigation of the lighthouse and life saving facilities of the northern part of the Pacific coast, which we have found to be entirely

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inadequate. The western coast of the United States has not been treated fairly by the government, and the ever-increasing coast trade deserves recognition and protection. The only thing I can say in regard to the tule life preservers, is that we have found them entirely satisfactory in some cases, and very defective in others. Most of the tests made in Seattle were favorable to the tule preservers, which we took from the steamers at random; but, while one of them supported a dead weight of 20 lbs. for 97 hours, another sank in the short space of four hours. They are not dependable; solid cork slabs should be used exclusively, as they are never in doubt, and will support a weight for an almost indefinite time."

BRITISH SHIPPING LETTER.

Liverpool, March 2.—Sir William White, K. C. B., late chief constructor to the British admiralty in the course of his fourth Cantor lecture on "Modern Warships," reviewed the progress of British naval ship building from 1885 onward. He said the Northbrook program of that year was a result of a pressure of public opinion. Its fundamental idea was to make up arrears of ship building, but incidentally a definite program was arranged extending over a certain period and involving a certain expenditure. More particularly, however, was this true of the Naval Defence Act of 1889 which authorized new construction, which was to spread over a period of five years. The program provided for the building of 10 battleships, 42 cruisers, and 18 torpedo gunboats of an aggregate displacement of 336,000 tons. The aggregate power of the propelling machinery approached 600,000 H. P. The total coal bunker capacity for the fleet was 50,000 tons. Altogether 1,342 guns were carried by the 70 ships, of which 32 were 67-ton 13½-in.; eight 29-ton 10-in.; 16 22-ton 9.2-in.; 232 7-ton 6-in., quick firing; 278 2-ton 4.7-in., quick firing; and 776 6-pounder and 3-pounder quick firing. To build the vessels about 160,000 tons of steel, 40,000 tons of wood, and 31,000 tons of armor were required. At the time when this program was undertaken mercantile ship building was proceeding at an unprecedented rate. Actually 6,000,000 tons of new merchant ships were constructed in five years, 1889 to 1893. Abnormal requirements for labor, material, and machinery consequently arose, and there were many expressions of opinion that the program would not be fulfilled within the stipulated period. But it was. Notwithstanding all the difficulties, it was practically completed in 1894. The original estimated cost for ships and armaments was 21½ million pounds sterling. That estimate was made when the designs for several of the types were incomplete. The size and cost of some of the vessels laid down at the later dates were, however, increased in order to secure better defence, higher speeds, larger coal supplies, and superior fighting and sea-keeping qualities. Dock yard wages were also increased. The effect was to increase the total cost to 22¾ million pounds sterling; but taking alterations of design into account, the actual excess of cost over estimated cost was no more than 2 per cent, and at the end of the five years only about £300,000 worth of the work was to do. That was an achievement for which they had to thank the great private ship building, engineering, steel making, and armor-plate making firms. But for their enterprise it would not have been possible. From 1885 to 1902 when Sir William resigned his position of director of naval construction in consequence of illness, the total expenditure on new construction, exclusive of armaments, was about 88½ million pounds sterling, and including armaments at least 100 million pounds sterling. Out of 88½ millions spent on ships and machinery between 1885 and 1902, the dockyards expended about one-sixth, and about £74,000,000 sterling were spent in the private establishments. No less than sixty millions of the total sum was estimated to have been spent on labor in the United Kingdom. In the 12 years, 1885 to 1902, the displacements of British battleships had increased from 14,000 tons to 16,400 tons, and the cost of a battleship, exclusive of armament, from about £800,000 to about a million and a third. In the King Edward class the cost of the hull was rather more than £400,000, the cost of the armor about the same, and the expenditure on labor about £250,000. The propelling and auxiliary machinery cost more than £200,000; and the gun mountings, mechanisms, and torpedo tubes about as much as the propelling machinery. The incidental charges of the dock yard ships amounted to about £90,000, making up the grand total of about a million and a third. The guns cost £90,000. The cost of ammunition and reserves was additional, and when fully equipped each ship of the class represented a value of more than one and a half millions sterling. The Dreadnought of 30 years ago cost about £600,000. What the Dreadnought now building would cost was difficult to say, but recent unofficial estimates put it as high as one and three-quarter millions. The cost of foreign battleships built in the same period was much greater in relation to size; the French Patrie of 14,600 tons working out at £1,422,000 and the cost of the German Hessen class of 13,000 tons at £1,157,000.

As stated in my last letter, Messrs. Yarrow & Co. Ltd. having decided to leave the Thames have fixed upon the Clyde for the building of their new ship yard. Here they will continue their work under more favorable conditions, for on the Clyde labor is comparatively cheap, land is not dear, coal and iron are within close touch, and last but not least, the Skelmorlie measured mile is close by, and is without question the best speed testing ground around the British coasts. As Messrs. Yarrow intend to continue the class of work which has made their name so famous, the last mentioned advantage is great, for the firth of the Clyde is both deep and sheltered, two essentials for the speed tests of destroyers, torpedo-boats, and other comparatively small but speedy craft. The site acquired is at Scotstown, on the north side of the Clyde, lying immediately between Messrs. John Shearer & Sons' new ship yard and dry dock and the Scotstown Iron Works. The frontage to the river is nearly 800 ft. and it goes back over 700 ft. The works can be extended considerably if found necessary, as an option on a property adjacent is held by the firm. Messrs. Yarrow intend to leave no stone unturned in equipping their new yard in a thoroughly up to date fashion

The Cunard Company have decided to name the two new fast turbine steamers now being built for the company under the agreement with His Majesty's government by Messrs. John Brown & Co., Ltd., Clydebank, and Messrs. Swan Hunter, and Wigham Richardson, Ltd., Wallsend, Lusitania and Mauritania, respectively.

The Cunard Company on Friday, Feb. 23, permitted about 600 of their passenger agents, some of whom came from such distant places as Norway, Sweden, Denmark and Russia to inspect the new turbine steamer Carmania, and enjoy a short trip in her in the Liverpool bay. They were all greatly impressed with the immense size of the vessel, and loud in their praises at the unsurpassed accommodation for first, second and third class passengers. Great interest was also displayed in the turbine machinery, and the description of this by Mr. A. P. Moorhouse the general manager of the Cunard Company, after the guests had been entertained to lunch is one of the clearest and best I have come across, and will doubtless interest readers of the MARINE REVIEW. Mr. Moorhouse said one

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of the most remarkable features of the turbine machinery is its repose; its lack of all display. They knew the racket of the ordinary channel boats—paddle and screw—how their small piston rods chased each other clamorously up and down in incessant hurry. In larger ships the noise and movement is proportionately greater. When you come to the engine room of the Carmania, the latest development of ship engineering, you see and hear practically nothing. Three huge cylinders steel and iron bound, lying in their beds like three sleeping giants, who do not even snore, are all that is in evidence. But the inside of each of these quiet cylinders is one of the busiest places on earth. 1,100,000 little brass blades varying in size from the blade of a pocket-knife to the blade of a dinner-knife, are fixed in large drums, nearly as large as the cylinder itself. You remember the inside of a musical box how the little points of steel project from the brass drum that turns round and makes the music. Well, the blades before mentioned are fixed in and project from the drum in somewhat the same way, but instead of being dotted about, apparently at random, they are put in regular rings round the drum like collars. The rings are close together, and the blades about a quarter of an inch from each other. The blades all stand straight out from the drum, but slightly slanted from their full face, like a door that is half open, or like troops of little soldiers on the half turn, so that when the steam is admitted at the forward end of the cylinders, it presses upon this oblique surface of the blades which transmit the pressure to the drum in which they are fixed, and move it round. Just in the same way the wind, striking upon the slanting surface of the blades in the sails of a windmill, pushes the sails round. Now they could, perhaps, imagine how the steam from the thirteen immense boilers, rushing through the cylinders and pressing against the oblique sides of these 1,100,000 blades with a pressure as soft as down, but as irresistible as the sea, makes the drum revolve quicker and quicker. And as one end of the long propeller shaft is firmly fixed in the drum, and as the other end is outside the stern of the ship in the sea, with the propeller blades attached to it, they would see that as the drum revolved, the shaft revolved and turned the blades, that churned the sea, and moved the house that Jack built. By Jack, he meant, of course, Messrs. John Brown & Co., Ltd. It sounded like a fairy tale, but those little dwarfs of blades, by their mere multitude and unanimity, and with a quietness that could be felt, should push a huge vessel like the Carmania along, but that it was not a fairy tale was proved by the fact that when steaming at the rate of 18 knots, or nearly 21 miles an hour, they would not even know that they were moving at all, unless they looked out of the windows. The steadiness of the ship was in all weathers indeed extraordinary.

On Saturday, Feb. 24, Messrs. John Brown & Co., Ltd., launched the third new steamer ordered for the Fishguard and Rossclare Railway Company's cross channel service. This vessel is to be fitted with turbine propelling machinery, and will be in all respects similiar to the two ships already launched, the first by Messrs. Cammell, Laird & Co., named St. George, and the second by Messrs. John Brown & Co., named St. David. Great things are hoped for, as these steamers are expected to be the swiftest, and most luxuriously fitted channel steamers afloat. The name of St. Patrick was given to the vessel launched on Saturday, and she like her two sister ships has been constructed to the designs and specifications of Mr. Charles T. Ramsay, M. I. N. A. of Liverpool.

Quite a number of vessels are just now being built fitted with Sampson derrick posts instead of the usual masts. The utility of the change seems to be appealing to an increasing number of ship owners, who have no regrets in substituting appliances which will assist them in their business for what, after all, did little more than give a picturesque look to vessels. This type of vessel is proving most popular with firms whose ships trade to out of the way ports where they have to rely mostly on their own derricks for loading and discharging cargo. In many of the smaller ports the harbors are too shallow for deep draught vessels, and all the cargo has to be lightered ashore.

FOREIGN SHIPS AT AMERICAN MANILA.

We own the Philippine islands, and we own the busy port of Manila, yet, because of the want of American ships, we gave the following business there, arriving and leaving, to foreign ships in the 15 days ended Jan. 20, last:

British steamer Hyson, 12,000 bales of hemp; British freighter Lothian, 12,000 bales of hemp; German steamer Vorwarts, full cargo of rice; British steamer Tean, hemp and miscellaneous freight; British steamship Nairn, 5,000 tons of coal; British steamer Athol, hemp for New York and Boston; S. S. DePanay, from Barcelona and Liverpool, general cargo; British steamship Changsha, general cargo from Japan and China; British steamship Indrani, large cargo of hemp for New York; Chinese steamer Taming, 1,000 tons of general cargo from Hongkong; Chinese steamer Yuensang, to Hongkong, hemp and sundries; British steamship Taiyuan, from Australian ports with Australian products; British steamship Australian, with Australian products in and Philippine products out; British steamship St. George, with large cargo, from New York; British ship Palma, 15,000 bales of hemp, and 1,500 tons of coprax, for Marseilles, London and Liverpool; two Hongkong liners with general cargo; British steamship Gulf of Venice, from Australia, with lumber, coal and refrigerated provisions; Occidental and Oriental steamer Doric from San Francisco via Nagasaki, with general cargo, and 600 sacks of U. S. mail; Austrian Lloyd freighter Nippon, with hemp, tobacco and coprax, for European ports; British steamship Kweilin, from Amoy, China, with cattle and general freight; German steamship Liberia, from Hamburg, with railway material; in all, 22 foreign ships did American foreign business at American Manila in 15 days, without even one American foreign trade being recorded as either arriving or departing, except one army transport.

Notation of that humiliating fact, and careful perusal of this (to Americans) humiliating list, is earnestly asked of the American house of representatives as they discuss the ship subsidy bill recently passed by the senate.

Schenectady, N. Y. WALTER J. BALLARD.

The board of directors of the Clyde line recently acquired by the Charles W. Morse interests is as follows: Charles W. Morse, Calvin Austin, John Inglis, C. M. Schwab, Thomas Clyde, Harry Morse, John W. Gates, H. M. Whitney, J. F. Sweasy. The directors elected Calvin Austin president; Theodore Eger, vice president and general manager; W. H. Campbell, secretary and treasurer; and E. H. Kelly, assistant secretary. Mr. Eger has been for many years the general manager of the Clyde Line.

The large new freight-carrying steamship Bessie Dollar, which was recently built on the Clyde for the Dollar Steamship Co., of San Francisco, recently reached that port from Europe after a voyage of sixty-five days. The vessel brings a cargo of 6,000 tons the greater part of which is cement. Capt. Low reports fine weather on the maiden voyage. The Bessie Dollar is designed for the lumber trade between San Francisco and Puget sound ports. She is of British registry.

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THE SHIPPING BILL IN A NUTSHELL.

Senate Bill 529, framed by the president's Merchant Marine Commission, and passed Feb. 14 by the senate, provides for:

1. A volunteer naval reserve of 10,000 officers and men of the merchant marine and fisheries, trained in gunnery, etc., subject to the call of the president in war, and receiving retainer bounties as 33,500 British naval reserve men do.

2. Subventions at the rate of five dollars a gross ton a year to all cargo vessels in the foreign trade of the United States, and to craft of the deep sea fisheries, and $6.50 a ton to vessels engaged in our Philippine commerce —the Philippine coastwise law being postponed till 1909. But these cargo vessels in order to receive subventions must be held at the disposal of the government in war, must convey the mails free of charge, be seaworthy and efficient, carry a certain proportion of Americans and naval reserve men in their crews, and make all ordinary repairs in the United States. Ships lose their subventions if they leave our trade for that of foreign countries, or if, like the Standard Oil craft, they are not engaged exclusively as common carriers.

3. Subventions to new mail lines from the Atlantic coast to Brazil, Argentina and South Africa; from the South Atlantic coast to Cuba; from the Gulf coast to Cuba, Brazil, Mexico, Central America and the Isthmus of Panama; from the Pacific coast via Hawaii to Japan, China and the Philippines, and to Mexico, Central America and the Isthmus of Panama, and from the North Pacific coast direct to Japan, China and the Philippines, with increased compensation to one existing contract line from the Pacific coast via Hawaii and Samoa to Australasia.

All ships receiving subventions must be already American by register or American-built—thus excluding the foreign-built fleet of the Atlantic steamship combination. Not one dollar is given to fast passenger and mail lines to Europe. Ships constructed for foreign commerce to receive these subventions can under the Dingley tariff be built, equipped and repaired of materials imported free of duty.

The maximum annual cost of the proposed mail subventions will be about $3,000,000; of the other subventions and retainers to the naval reserve, from $1,550,000 in 1907 to $5,750,000 in 1916. If tonnage taxes are increased, as originally proposed, the legislation will cost nothing the first year, but turn $616,000 into the treasury, and the annual average net cost for ten years, with the building of new ships, will be $4,625,000.

Great Britain next year will pay $6,000,000 or $7,000,000 in shipping subsidies, France $8,000,000, Italy $3,000,000, and Japan about $4,000,000.

THE NEW HAMBURG-AMERICAN LINER.

The twin steamship Nieuw Amsterdam, a fine new steamer of 17,000 tons gross register, and about 10,000 horsepower, built by Messrs. Harland and Wolff, Ltd., for the Holland-America line to trade between Rotterdam and New York, left the harbor on Thursday morning, Feb. 22, and proceeded down the Lough. This company's fleet has been practically all built in Belfast. As the tonnage would indicate, the vessel is of large size, and of great cargo carrying capacity, being also provided with accommodation of the latest and most improved character for about 450 first-class, 250 second-class, and 2,000 to 3,000 third-class passengers. The dimensions are:—Length, 600 feet; breadth, 68 feet 6 inches; and depth, 48 feet. The machinery, consisting of two sets of quadruple-expansion balanced engines and boilers, has also been constructed at the firm's engineering works, Abercorn Basin. In view of the important trade the ship will be engaged in, the decorative work has received considerable attention. The first-class saloon has been decorated in Austrian oak framing, with stamped zinc panels gilt in "new art" manner. A handsome dome is overhead, with placques representing the seasons, and cartouches of municipal arms—state of New York, including the city, Nieuw Amsterdam, Holland State and city of Amsterdam, city of Rotterdam, etc. The social hall and music room, situated on the promenade deck, is in dark polished mahogany, inlaid with marquetrie, and enriched with bronze gilt ornaments in "Empire" style. The fireplace at the forward end is of blue torquoise marble with cream tiles, with electrical heating arrangements so as to resemble a wood fire, and is surmounted by an overmantle, carrying a large tile picture showing Nieuw Amsterdam about the year 1730. There is a grand pianoforte and an organ in this room. The electric fittings are of a handsome character, and finished in electric gilt. The first-class entrance on the promenade deck is decorated in teak and birds-eye maple, with ornamental glass dome overhead. On the walls are portraits of the Queen of Holland and the Prince of Holland. In the center of the promenade deck a ladies' tea-room has been arranged for, paneled in modern Japanese style, in polished satinwood, with black Japanese lacquers and inlays specially procured from Japan. Painted Dutch tile pictures representing landscapes have been fitted at intervals round the walls. The ceiling is decorated with painted linen pictures, from which are suspended Japanese lamps. A covered dome in painted and tinted glass with blue laburnum and bird subjects supplies light to the room. The fireplace is of black lacquered marble, with painted tiles, and cast-iron frame for electric heater. The room is also fitted with the necessary tables and chairs in Japanese style. India-rubber tiles are laid on the floor of this room and of the first-class smoke-room, which is also arranged for on the promenade deck at the after end. This apartment is decorated in fumed oak, old Dutch style, and Palissander wood inlays with architectural subjects on painted tiles at intervals round the walls. A Belgian marble mantlepiece is done in tiles of old Dutch colors, the design being in keeping with the rest of the decoration of the apartment. The heating of both rooms is entirely electrical. After a satisfactory trial and adjustment of compasses in the Lough, the Nieuw Amsterdam left for Rotterdam, Mr. Wierdma, the chairman of the company, together with Mr. Van Halden and a company of about 20 gentlemen, being on board, and Captain Bonjer, commodore captain, in command of the ship. She is expected to take her sailing for New York early in March.

In an address at the naval academy at Annapolis, secretary of the navy, Charles J. Bonaparte, said: "I have seen lately published statements to the effect that here and at West Point the country gave away an education. What I think of such statements it would not accord with the restraints of official position for me to say. Here and there in this immense land may be found an enemy to our navy; a few men who hate the nation's greatness and who hate the navy as the sign and safeguard of that greatness; a few men whose view of everything is proportioned to the little breadth of their own minds and who give their time to petty bickerings about petty things, on this subject as they might and do on any other. But for these men the American people has little esteem and with their talk and their aims it has little sympathy."

The Canadian Pacific railway announces that on May 25 and at intervals thereafter the Canadian Australian line new twin screw turbine steamer Maheno of 5,282 tons will sail from Vancouver to Sidney, calling at Honolulu, Fiji and Brisbane. This will be the first turbine steamer on the Pacific.

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IMPORTANT ABANDONMENT CASE DECIDED.

An important admiralty case was decided by Judge Landis of the United States district court of Chicago. The steamer Argo, loaded with freight and passengers, bound from Chicago to Holland, Mich., at 5 o'clock in the forenoon of Nov. 24, 1905, was struck by a gale of wind from the southward, and attempting to enter the piers was drifted to leeward, struck the north pier and went on the beach. The sea was so high that the life boat could not get alongside to rescue her passengers. On the afternoon of the same day, however, they were rescued by the aid of a breeches buoy, and two days after the cargo was taken from the steamer in an uninjured condition. The steamer, at the time of her stranding, was insured for $60,000 under full marine policies, and in addition had $30,000 of disbursement policies on her.

On the afternoon of Nov. 24, 1905, the Graham & Morton Transportation Co., the owners of the steamer, abandoned her to the underwriters, and thereupon the latter sent the tug Favorite to the rescue of the steamer. The Favorite arrived there on Nov. 27 but for some reason did no work in trying to get the vessel off, and a few days afterwards the Great Lakes Towing Co., under a contract of $3,000 (no cure no pay) went to work on her. Although three tugs and two pumps were employed more or less of the time when the weather was favorable, the work of rescue was on Dec. 23, abandoned. Thereupon the Reid Wrecking Co., with the tugs Salvor and Diver and two pumps undertook, for $6,500 (no cure no pay) to take the Argo off. With the aid of one of these tugs they succeeded in getting her off and after that temporary repairs were made and she proceeded to Manitowoc under her own steam arriving there Feb. 12.

On Jan. 16, 1906, suit was brought on a policy against the Western Assurance Co. and three other American companies, to recover for a constructive total loss. The case was reached for trial on Feb. 19, 1906, and after a trial lasting eight days during which a great many witnesses were examined, the court held the abandonment good. The reasons given by the court are that at the time of the abandonment on Nov. 24 there was high probability that it would cost more than half the amount insured, viz: $30.000, to save and repair the vessel, and that therefore the abandonment was justified, and it was good even though the cost of rescuing and repairing the vessel was less than $30,000. The underwriters contested the liability claiming that it did not cost more than $23,000 to rescue and repair the vessel, and therefore the abandonment was not justified, although there was proof on behalf of the owner that taking into consideration all the efforts that were made to rescue the vessel, together with the estimated cost of her repairs, the damages under the policy amounted to $36,000.

This is the first time the question of the right to abandon by reason of the high probability of a moiety loss has ever been decided by the courts on the great lakes. The last case arose in the Ohio river and was decided in 1887 by the supreme court of the United States. Mr. C. E. Kremer and Mr. C. W. Greenfield appeared for the owners and Mr. H. A. Kelley and Wm. E. Church for the insurance companies.

INTERNATIONAL WATERWAYS COMMISSION.

That negotiations are going on between the government of Great Britain and that of the United States looking to the adoption of a treaty settling everything regarding Niagara Falls was the purport of a statement made by Col. Oswald H. Ernst, chairman of the United States section of the International Waterways Commission, at the meeting of the commission held in the King Edward hotel. When the commission met in Buffalo, N. Y., on Nov. 12 last, an agreement was made on all points relative to the Sault Ste. Marie waterways, and the United States members were to have copies of this agreement prepared and sent to all the other members for their signature, and it was then to be laid before the governments of the United States and Canada. It appears, however, that after adjourning at Buffalo one of the United States commissioners raised some objections to certain clauses of the agreement, and the copies for signature were not prepared as arranged. When the commission met here on Tuesday the Canadian section understood that the Sault waterways would be disposed of first, but they were instead met with the above statement by Col. Ernst, who urged that before touching any other question an agreement should be come to regarding Niagara Falls, so that his government would have it as a guide in negotiating with Great Britain.

The Canadian commissioners said they had heard nothing of the negotiations and were instructed to ascertain all possible facts regarding the Falls, submit them to their government and then receive instructions. After some discussion it was decided to see how far all the commissioners could agree on certain facts. The reports of Canadian and United States engineers showed that the scenic beauty of the American falls was injured and the amount of water taken from them would be a serious matter unless checked. The United States commissioners believed also that the Canadian falls were in danger of having their scenic beauty destroyed by concessions though the Canadian section had not such pronounced views. The United States commissioners were agreed that the falls on their own side would be destroyed unless the government called a halt in concessions for water-power.

Col. Ernst and his colleagues were anxious for a report from the commission which might form the basis of the proposed treaty between Great Britain and the States, but the Canadian commissioners declined to agree to any such proposals without positive instructions from their own government, and at this point the commission decided that the matter should be taken up at a meeting to be held in Washington, D. C., on April 24 next.

It is understood that the commission has practically agreed on the regulations governing power concessions at and near the Sault, and on the measure necessary to secure the retention of the present depth of water in Lake Superior harbors.

On motion of Mr. Wisner, of the United States commission, seconded by Mr. Louis Coste, of the Canadian commission, a vote of condolence was passed to the widow and family of the late Hon. Raymond Prefontaine, M. P., the Canadian minister of marine and fisheries.

The Lake Carriers' Association having withdrawn its objection to the proposed tunnel under the river between Detroit and Windsor, the plans for its construction were approved.

The Marine Firemen, Oilers and Watertenders' Association of the great lakes has elected the following officers for the current year: President, Ed Stack; secretary, Michael Casey; clerk in office, James Holland; treasurer, B. C. Ralph; attorney, George H. Kennedy; agent and assistant at Cleveland, John Mitchell and Douglas Stewart; at Chicago, Joseph Leibold and Archie Smith; at Detroit, George Keenan; at Milwaukee, Daniel Dwyer; Ashtabula, Dominick Quinn; Conneaut, John O'Brien; Toledo, David King; West Superior, Wm. Jones; South Chicago, Barton De Foe; sub agencies: Ogdensburg, Robert Sullivan; Bay City, James McGivern.

The Hamburg-American line is building two 5,000-ton steamers for the Jamaica service of the Atlas line.

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THE MARINE REVIEW

DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED OR ASSOCIATED WITH MARINE MATTERS ON THE FACE OF THE EARTH.

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THE SHIPPING BILL.

The committee on merchant marine and fisheries of the house of representatives will consider the shipping bill on March 22. Never before have the prospects been so bright for the passage of this measure through congress. As known, the bill has already passed the senate and has secured the endorsement of leading men throughout the entire country. The approbation with which this measure has been received has been almost unanimous. Commercial bodies in all parts of the country have endorsed it. Labor organizations concerned with ship building have also adopted resolutions earnestly recommending its passage. Probably no single act that the present congress could perform would redound so much to the benefit of labor as the passage of the shipping bill. The modern ship is not the product of one man or one industry. There is nothing that mankind creates today which calls for such diversified employment as the building of a ship. It would be almost impossible to put one's finger upon an industry that is not directly or indirectly involved in the building of a ship. The modern steamer has become a floating city and calls in little for pretty much everything that goes to make up a town. The passage of the shipping bill would be like the building of hundreds of small cities in the United States, for it would mean the construction of hundreds of ships; enlisting the services not only of the naval architect, marine engineer and ship builders, but almost every artisan imaginable. The passage of the bill would mean the quickening of the industrial blood of the nation for 90 per cent of the cost of the ship is returned to the labor that builds it. The expenditure of millions in ship construction will be contracted for the moment the bill is passed.

Aside from the commercial reason there is a moral reason as well why the shipping bill should be enacted into law. Shipping is the one industry that has been neglected by the general government. It has extended the beneficent policy of protection to every industry save shipping, and it has caused American shipping to suffer by reason of that universal extension. There is no hope for an American merchant marine in the foreign trade without governmental support. It should be immediately given.

SCIENTIFIC LAKE NAVIGATION.

The MARINE REVIEW is quite convinced that the department which it will establish on April 1, that of scientific lake navigation, will be in a practical way the greatest service that it has ever rendered to the lake master. The department will be practical, and will be conducted by one of the most competent instructors. Mr. Clarence E. Long, who will have charge of the department, has had experience as teacher of navigation, as compass adjuster, as special navigator on every class of tonnage afloat—from the 30-ft. sail yacht to the large freighter. He has learned through experience and knows the exact needs and wants of the men who desire to undertake this special branch of study. The lake service is peculiar and there has been need of a simple and comprehensive work founded on correct principles and expressed in homely language for the lake navigator. This need Mr. Long will supply through the columns of the MARINE REVIEW. In its restricted sense as applying to the compass, there is as much call for the navigator on the great lakes as on salt water. There is a growing feeling among vessel owners to gain safety and economy in sailing their vessels by requiring the masters and mates to be navigators, that is to say, to have a full knowledge of the workings of the compass. This condition is clearly evidenced by the action of the leading shipping interest on the great lakes, the Pittsburg Steamship Co., in establishing schools in four cities for its masters during the past winter. It is also evidenced by a letter from Mr. J. C. Evans, western manager of the Anchor line, which will be found in another column in this issue.

This question of scientific lake navigation is not one of the future. It is of the present. It is no longer possible to evade it. The MARINE REVIEW school, which will open on April 1, will mark the beginning of the new order of things on the lakes. The surest

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and most convenient way to promote the evolution is to reach the master at his daily trade. The nautical school can reach them only during the winter season, and then only a small percentage. The MARINE REVIEW will reach them every week in the year with a special course of self-instruction. It will be so simply conducted that anyone may learn it without the aid of a teacher, but nevertheless the services of the teacher will be ever present. Under modern conditions on the lakes, the man who is an expert seaman but a poor navigator is of less use on a great steamer than a man whose knowledge of seamanship is limited but who has the ability to accurately direct the course of his vessel and fix by day or night the place of his ship.

We believe that every master on the great lakes will find the MARINE REVIEW during the current year to be a source of inspiration and instruction to him. Every effort will be made to make it so. Mr. Long's services will be at the disposal of every mariner, and the question and answer department which he will conduct will be of value not only to the individual master who asks the question, but to every other master on the lakes.

FREIGHT SITUATION.

Whether there will be a coal strike or not is problematical. A week ago it looked as though an amicable settlement might be made, but present indications are not so sanguine. Leading coal shippers still believe that a strike may be averted, but the belief is founded more upon hope than upon an actual summing up of the present evidence. Efforts are being directed towards minimizing the effect of a strike, should one be called. There is an abundance of coal in stock and it is being daily brought to lake ports in quantities. Vessels are holding it at 15 cents storage and the entire fleet is generally being employed to that end. In fact there is not a single vessel in the port of Cleveland that is not now holding coal, and the same condition obtains in part at other ports. Were the weather a little more favorable, vessels would be shifted from Buffalo for coal cargoes. Even in the event of a strike there will be enough coal on hand to supply cargoes for a limited period, enough at any rate to relieve the shortage now existing in the northwest.

Leading vessel interests, especially the ore mining companies, were hoping for an opening of navigation on April 1, but weather conditions have materially altered the prospect during the past week. While it is true that there is not much ice in the lakes proper, there is the same comparative thickness in the rivers and bays as obtained at the corresponding period last year. Zero weather has been prevailing in the Lake Superior country and ice has been steadily making, so that it is now about 17 in. thick at Sault Ste. Marie. There will be no attempt made to force a passage through this ice, and weather conditions will consequently govern the opening of navigation. Last year the freighters that attempted to break a passage through the ice in White Fish bay were seriously damaged, and spent a number of days in dry dock. No additional ore charters have been reported, but the coal rate has been definitely fixed at 30 cents from the head of the lakes, and 40 cents to Milwaukee.

Some chartering has been done in the lumber trade at $2.50, which is the rate fixed by the Lumber Carriers' Association.

BILL TO REGULATE MOTOR BOATS.

A bill has been introduced in congress to regulate motor boats. This new bill merely contemplates that operators of power boats of 15 tons or under shall take out license without examination. In support of the bill Secretary Metcalf says:

"Under the present law these boats and the navigators are wholly irresponsible, and numerous accidents have arisen from such facts. It is obvious also from the many letters of complaints that these boats being required to carry no special equipment and being subject to no special restrictions, enter into unfair competition with small steam vessels that are subject to all the requirements of the steamboat inspection law and a substantial premium is thus placed upon a form of traffic providing none of the usual safeguards for the lives of the passengers carried."

A measure to compel motor boats to conform to the ordinary rules of navigation and to safeguard life as much as possible cannot well be opposed; but all previous measures upon this subject have been designed to require these small craft to carry licensed officers, that is to say, engineers and pilots. Naturally, of course, such a measure if enforced would kill the motor boat industry, as the motor boat is usually operated by its owner. The average owner could not afford to hire men to run it, but of course, they should be compelled to observe the rules of the road.

ICE CONDITIONS AT SAULT STE. MARIE.

Harvey's Marine Bureau, Sault Ste. Marie, writes concerning ice conditions as follows: I have gathered the following information in regard to the actual ice conditions in the Soo river and they are as correct as is possible to get: Whitefish Point:—No ice above the point. What ice there is in the bay is loose and moving back and forward. Iroquois:—Ice solid but not as heavy as last year. Lime island:—71 in. of blue ice with considerable snow on it. Point Au Frene:—22 in. solid ice. This is the most solid place in the river. Hay Lake:—15 in. ice in some parts but most of it about 12 in. At Sault, Mich.:—17 in. ice with considerable snow on it. The weather the past few days has been 10 above with ice making right along. It went down to 2 below zero last night and this has tightened up conditions very much. The opening is not going to be anything like as early as most vesselmen are figuring on.

CONFERENCE WITH ORE HANDLERS.

The dock managers have been in conference with the representatives of the International Longshoremen's Association at Cleveland for the past ten days, but have been unable to reach an agreement for unloading vessels at Lake Erie ports for the season of 1906. The ore handlers desire a ten-hour day, but the dock managers maintain that with the increased volume of trade it is impossible to reduce the hours of labor. Last season the men worked eleven hours a day until Sept. 1, and ten hours thereafter. An increase of 7½ per cent in wages for the ore shovelers is also included in the demand.

The American Manufacturing Co., 65 Wall St., New York, has been experimenting for a long time to make a waterproof transmission rope and claim now to have accomplished it. The waterproofing adds about 2 per cent to the weight of the rope which lasts as long as standard transmission rope, for in addition to the waterproofing it is thoroughly lubricated internally with flake graphite.

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SOME PHASES OF THE PANAMA PROBLEM.*

BY JOHN F. WALLACE.

While there remain many engineering problems of greater or less importance in regard to the solution of which even engineers of great reputation differ, and while the detailed engineering works are of magnitude, it is generally conceded that no engineering problems remain which are impracticable of solution, and that even a sea level canal is possible, the time and cost of its consummation having been found to be within reasonable limits. At last the great problem as to the selection of a plan—whether it shall be one with six locks at an elevation of approximately 85 or 90 feet above sea level, or a sea level canal—has been submitted to the American Congress by the President for its final decision, together with views and opinions of the leading engineers who have given this question study, and the data upon which these conclusions are based.

As the speaker will probably be called upon by the senatorial committee to give his views on the general question of plan, he does not consider it proper to discuss this feature of the situation in detail at this time, but desires more particularly to call attention to the fact that consideration of the questions of administration and the methods under which this great work shall be conducted is equally vital. While there is no doubt that, out of all the controversy on matters connected with this great subject, success will finally come, it is a question whether it shall be attained in a straightforward, efficient, businesslike manner, resulting in the economical, efficient and speedy construction of the best type of a canal to serve the commerce of the world through future generations, or whether we shall finally reach the light after stumbling along in the dark, falling occasionally in the slough of despond, and only achieving success after the wasteful expenditure of millions, the lapse of years of time, and with our self esteem and great American boastfulness badly damaged.

From the experience of the speaker in connection with this and other public works, he is forced to the conclusion that either the work should be put into the hands of one strong man, with practically unlimited authority, combining the technical and scientific training of the engineer with the administrative and executive ability of a man of force; with this should be coupled the separation of all matters connected with this work from the control of the ordinary government departments at Washington—under such supervision only as to insure the government that his administration is efficient or the same result accomplished through the letting of the work to a contracting firm, large enough to control under one management the entire constructive work on the isthmus, under broad and general specifications and under such general supervision as may appear to Congress to be proper. The first step of any contracting firm would then be to place its affairs in the hands of a strong single executive, supported by such advisory technical knowledge as might be deemed necessary. The precedent for this method, and a working application of this principle, is the special agreement which was made for the construction of the improvements at the mouth of the Mississippi under Captain Eads. It was a contract which bound the contractor to certain results for a specific sum, and no more satisfactory compact for public work was ever made by the United States.

It is only in this way, or some substantially identical way, that the construction of the canal can be successfully accomplished. While the work may be completed at some time, and at some cost, by the poorest and most inefficient method—even by hired labor under government control—the accomplishment will be far from satisfactory. It goes without saying that if any large American corporation were engaged in the business of constructing a great public work for the purpose of furnishing transportation, unhampered by political questions or selfish interests, the work would attract practically no attention, except the ordinary interest connected with an engineering project of great magnitude. It is a fact of which the public is not aware that many of the large railway systems to-day are spending as much money annually, in the improvement, maintenance and operation of lines of transportation providing for the handling of tonnage much greater than that which will pass through the Panama Canal, or will be expended on the Panama Canal, and their operations proceed with hardly a newspaper notice.

It may be argued that commercial interests would suffer by placing the Panama Railroad under the control of a general contractor, and that it will be difficult to secure the proper control of its obligations as a common carrier.

The plan suggested in my official communications on this subject was that of operating the Panama Railroad as a simple transfer organization, whose sole duty as a common carrier would be to receive the freight delivered at its ocean wharf on one side, and deliver it at the ship dock on the other side, for a flat rate per ton—regardless of classification, except so far as the cubical contents of certain light articles would be made equivalent to a ton. The proposition is simple and perfectly practicable. The forwarding agents of the world would thereafter bill all goods over transportation lines using the Panama Railroad as an immediate transferring link, on their bills of lading, subject to the transfer charge across the Isthmus of Panama; this could be collected by government agent, either from the steamship line delivering the freight or the one receiving it. In this way no complication of accounts would be necessary, and all commercial interests would be treated with equal fairness. It would be a simple, normal and logical introduction to the conditions which will exist when the canal is opened, and rail transshipment gives way to through passage of shipping under a flat tonnage charge, and would save over $100,000 per annum of the expenses of management through the present New York office alone.

One of the objections raised to the proposition was that "it would unsettle transcontinental rates." If this is to be a final and determining reason, why are we building the Panama Canal?

After the proper facilities have been provided in the way of docks and wharves, double tracking of the Panama Railroad, and providing it with modern equipment, there will be no difficulty in a general contractor easily, promptly and economically handling all the commercial freight, without any interference with the canal construction work, particularly if he has the absolute control of both, and is held accountable only for the proper performance of the duties of a common carrier.

The question of local rates and the charges to be made for this service by the contractor are simple and easily adjusted; it would seem a brilliant opportunity for the United States government, either through its Interstate Commerce Commission or otherwise, to experiment with the regulation of rates across the isthmus and the general control of the operation of the Panama Railroad, and acquire some experience therein before attempting to tackle the complicated problem of regulating the rates and controlling the methods of doing business on 200,000 miles of railway which interlace and ramify throughout the United States. The transportation rate problem of Panama, as compared with those of the United States as a whole, might be likened to a single grain of sand compared with the seashore.

THE TEHUANTEPEC RAILROAD.

While the construction of the Panama Canal will confer great benefits on the commerce of the world, the commercial interests of Great Britain have not been blind to the possi-

*Abstract of an address delivered before the Illinois Manufacturers' Association at Chicago, on March 2, 1906.

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bilities of a project and route which will, in a large measure, anticipate the future benefits of the construction of the Panama Canal, and give immediate results, pending its accomplishment, with strong probability of being able to retain the trade if once secured. I refer to the railroad transportation facilities which are about to be completed in the interests of British capitalists, across the Isthmus of Tehuantepec, a distance of about 176 miles.

This railroad is being constructed in a most substantial manner, and provided with the very best facilities, equipment, etc., in order to handle a large amount of traffic at the minimum cost per ton. Modern machinery and methods will enable this railroad to conduct a profitable business at a rate of not to exceed $2 a ton from ship hold to ship hold; and with the best modern loading and unloading facilities, proper wharves, warehouses and harbor terminals, the time from ship to ship should not exceed an average of two days.

It is fair to assume that modern cargo steamers are able to handle the average run of ocean freights with profit on a basis of one-tenth of a cent per ton per mile, or, in round figures, $1 per 1,000 miles. The advantages of the Tehuantepec route over the existing route to the far east by way of the Suez Canal are as follows:

From New York to Australia, say the port of Sydney, the saving of distance by way of the Tehuantepec Railroad would be 5,700 miles, and any railroad rate across the Isthmus of Tehuantepec, less than $5.70 per ton, should take this business from the Suez route. In addition it would save the time it requires an ordinary cargo vessel to steam 5,700 miles, minus the time required to transfer the freight across the isthmus by rail. This would make an actual saving of time of at least 15 days, even allowing the maximum of four days for the isthmian transit.

From New York to India and China points, this route would not be so material, as the line of least resistance from a traffic standpoint would be over the transcontinental lines through San Francisco, Seattle and other Pacific ports.

From Liverpool to points in the far east where the distance is the same, the Tehuantepec Railroad could charge the Suez tolls, which are approximately $2 per ton, and compete for the business with a fair profit.

Turning to the ports, however, in the United States, the advantages given by this route are also remarkable. From New Orleans to Hong Kong, the saving would yield the Tehuantepec Railroad $4.80 a ton on the basis of equivalent charges by the Suez route, in addition to saving from 12 to 14 days in time.

From New Orleans to Yokohama the saving over the Suez route would be 8,400 miles, which would enable the Tehuantepec Railroad to charge $8.40 per ton for the transit of freight on its railway, on an equivalent basis with Suez, and save approximately 24 days in time.

From New Orleans to Australia, the port of Sydney, the figures would be practically the same. As there is little question of the ability of this railroad to handle freight from ship to ship for $2 a ton or less, its ability to build up an enormous business to the far east in competition with the Suez route is plainly manifest.

Let us now compare the Tehuantepec route with that of the Panama Canal, on the same assumption that $1 per ton will carry ocean freights 1,000 miles, and that $1 per ton will be the minimum rate charged for transit through the canal.

From Liverpool to Hong Kong, the saving in distance via Tehuantepec will be 1,200 miles, and allowing two days for the transit of the freight across the Isthmus of Tehuantepec, the saving of time will be approximately two days. The saving in distance will be equivalent to $1.20, which, added to the minimum charge of $1 through the Panama Canal, would give $2.20 as a maximum charge to the Tehuantepec Railroad.

From Liverpool to Yokohama the saving, as against the Panama route, will be 1,100 miles. From New York to Australia, port of Sydney, the saving will be 761 miles, which, on the same basis as just stated, would yield the Tehuantepec Railroad a maximum charge of $1.76 a ton, or approximately 1 cent per ton per mile, some 40 per cent higher than the average rate on the trunk lines in the United States.

From New York to San Francisco the saving will be approximately 1,200 miles, which would yield $2.20 as a maximum rate to the Tehuantepec Railroad.

From New Orleans to Hong Kong, a common point for northern China, the saving of the Tehuantepec line over Panama is approximately 2,000 miles, which would permit the Tehuantepec Railroad to charge a maximum of $3 per ton on an equivalent basis, and save in time approximately five days.

From New Orleans to Australia, port of Sydney, the saving would be approximately 1,400 miles, allowing the Tehuantepec Railroad a maximum charge of $2.40.

From New Orleans to Honolulu the saving would approximately be 2,000 miles, permitting the Tehuantepec Railroad to charge a maximum rate of $3 per ton.

From New Orleans to San Francisco the saving in distance via the Tehuantepec route would be 1,800 miles, permitting the Tehuantepec Railroad to charge a maximum of $2.80 a ton, with corresponding saving of several days in time. The advantages of Tehuantepec over the Suez and Panama routes in the saving of money and time make it self evident that in the years that will elapse before the completion of the Panama Canal, our British cousins will undoubtedly build up a large and profitable business which it will be difficult thereafter to divert back to the Panama route.

FLAT RATE FOR PANAMA RAILROAD.

I do not submit these ideas to discourage our own enterprise, but simply to show the cold facts and to point out at least the direction in which I think the remedy lies: It is in the immediate provision at Panama of the proper facilities and equipment for the development of the maximum efficiency of the Panama Railroad, and the putting in of a flat rate of not more than $2 a ton and possibly as low as $1.50, in order to prevent other lines from diverting traffic from that route, and to encourage and expand the traffic tributary to it. That this can be done, without any material loss to our government, is evident.

A rate as low as $1.50 a ton—which will give an average of 2 cents per ton per mile for transit over the isthmus, and allow 50 cents per ton for the handling of freight from ship to car and from car to ship—would be ample, after complete facilities for handling the business had been provided and the business had increased to a sufficient amount to justify it—say to 1,000,000 tons per annum.

So far as the mere question of rate is concerned, with the only disadvantage of breaking bulk, this rate would immediately enable us to compete with the Suez Canal on all traffic from the United States ports to the far east, and from the ports of Europe and Australia, Japan, China, and all points east of Singapore; and, so far as our trade with the west coast of South America is concerned, this would give the United States, particularly the Mississippi valley, a decided advantage over all the ports of Europe, and would enable us to anticipate the larger part of the advantages of the Panama Canal. It would give our merchants and manufacturers such a foothold in this trade, provided it is properly catered to and developed, as would enable it to be held, at least in part.

The failure of the United States to improve and utilize the Panama Railroad to its full capacity, and do it at once, may seriously affect the value of our Panama investment, which has already reached 70 millions of dollars, and may reach 300 millions.

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The great direct benefit of a flat rate of $2 a ton or less across the isthmus of Panama by rail will at once put us in a position where, for a comparatively small investment not exceeding 2 per cent of the total cost of the canal—which investment should be made in any event, in order to assist in its construction—a large percentage of the ultimate advantage to be derived from the canal, commercially, will be secured. The greater part of this benefit will lie in the reduction of rates, which will result to the benefit of the agricultural and commercial interests of the countries in Central and South America bordering on the Pacific below the Mexican line.

While the proportion of the rates which have accrued to the Panama Railroad on business from New York to San Francisco has been low and reasonable, its charges on the traffic passing over the isthmus to and from the countries bordering on the Pacific coast in Central and South America have been exorbitantly high, and have been kept by the railroad at a figure as high as possible without causing the traffic to be diverted around Cape Horn. It is the speaker's recollection that the rate which accrued to the Panama Railroad on coffee from Costa Rica has been as high as $6 a ton for the distance across the isthmus say 50 miles. A lowering of the rate to $2 a ton or less will stimulate all forms of agricultural and commercial enterprises in the countries affected thereby. It will largely increase the population and the consuming capacity of these countries; and if this trade is properly fostered and catered to by the manufacturers and merchants of the United States it should yield large benefits and cement the political commercial and personal friendships between ourselves and the nations of Central and South America.

COMMENDATION FROM ANCHOR LINE.

Editor MARINE REVIEW:—We are very pleased and gratified to read in your issue of March 8 that you will begin on April 1 a department devoted to scientific lake navigation, under the direct charge of Mr. Clarence E. Long, the aim of your new department being of practical assistance to lake masters and mates. There is no reason why a master or mate having passed proper government examination should not be thoroughly versed in the compass, its deviations, corrections by adjustment, etc., so that we will not be called upon every year to send compass adjusters aboard our steamers to do work that our captains should have an intimate knowledge of and be able to perform themselves. We are very heartily in favor of the stand taken by President Coulby, of the Pittsburg Steamship Co.'s fleet, in establishing a compass school for his captains so that each one of them will be able to adjust his own compass and know all about it. Following this good example we have had this winter two of our captains, at our expense, take a course in compass adjusting, so that later from the knowledge thus gained each one of our other masters will be a compass expert himself. This will accomplish two results: First, cause our boats to be more carefully navigated, for we will know when we find courses not true how to adjust our own compasses. Second, we will not be put to the extra expense of having compass adjusters to correct our compasses when our captains find them not true,—something that we ourselves ought to know.

Last season we sent, with the compliments of our company, to each one of our captains and engineers, your paper, and they have all expressed to me at different times that they absorb weekly a great deal of knowledge which proved to be of great benefit to them. Now, that your new department devoted to scientific lake navigation will be before them every week, I know this season they will find your paper of greater benefit than ever before. I am glad to see your progressiveness, if I may use that word, in all matters pertaining to lake navigation, and how we may better our service. We want our captains and mates to be real navigators in the truest, fullest sense of the word. We want them to be conversant with every detail in connection with their work and absolutely know every part of it. The steamers of the great lakes cannot be navigated too carefully, and I feel it is up to the owners and representatives to encourage their masters and mates in every way possible in this respect. Knowledge thus gained by them is of great benefit to the owners. We again commend you most heartily for what you have undertaken to do.

Very sincerely,

J. C. EVANS, Western Manager.

SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary of naval construction, issued by the bureau of construction and repair, shows the following progress upon naval vessels:

Name of Vessel	Building at	Per cent of completion Feb. 1	Mar. 1 1906
	BATTLESHIPS.		
Virginia	Newport News S. B. Co..	98.6	99.
Nebraska	Moran Bros. Co.....	86.17	90.
Georgia	Bath Iron Works.....	93.35	94.59
New Jersey	Fore River S. B. Co.....	96.5	97.5
Rhode Island	Fore River S. B. Co.....	99.5	100.
Connecticut	Navy Yard, New York....	95.16	96.13
Louisiana	Newport News S. B. Co....	95.24	97.19
Vermont	Fore River S. B. Co.....	73.5	76.3
Kansas	New York S. B. Co.....	72.5	74.2
Minnesota	Newport News S. B. Co....	82.08	83.52
Mississippi	Wm. Cramp & Sons.....	49.08	51.21
Idaho	Wm. Cramp & Sons.....	47.19	49.18
New Hampshire	New York S B. Co.....	37.1	39.3
	ARMORED CRUISERS.		
California	Union Iron Works.....	88.7	90.0
South Dakota	Union Iron Works.....	87.3	89.1
Tennessee	Wm. Cramp & Sons.....	94.53	94.53
Washington	New York S. B. Co.....	94.4	95.5
North Carolina	Newport News S. B. Co...	34.48	37.04
Montana	Newport News S. B. Co...	30.11	32.41
	PROTECTED CRUISERS.		
St. Louis	Neafie & Levy S. & E. B. Co.	88.34	90.56
Milwaukee	Union Iron Works.....	89.8	90.9
	TRAINING SHIP.		
Cumberland	Navy Yard, Boston.....	95.	95.
Intrepid	Navy Yard, Mare Island..	97.5	97.5
	SCOUT CRUISERS.		
Chester	Bath Iron Works.....	18.87	22.28
Birmingham	Fore River S. B. Co.....	21.0	24.5
Salem	Fore River S. B. Co.....	21.1	24.9
	SUBMARINE TORPEDO BOATS.		
Submarine T. B. No. 9,	Fore River S. B. Co.	51.0	61.
Submarine T. B. No. 10,	Fore River S. B. Co.	43.3	48.9
Submarine T. B. No. 11,	Fore River S. B. Co.	43.5	50.9
Submarine T. B. No. 12,	Fore River S. B. Co.	43.1	48.3

REGISTRY TO FOREIGN WRECKS DENIED.

Section 4136 of the revised statutes for the registry of foreign vessels wrecked in the United States and subsequently repaired in the United States has been repealed. The provisions of this statute were that whenever a foreign vessel was wrecked in the United States, purchased and repaired by a citizen of the United States, the commissioner of navigation might grant American registry to her when it was proved that the repairs upon such vessel were equal to three-fourths of the cost of the vessel when so repaired. During its fifty odd years of existence this law has been subject to so many constructions by the attorneys general that the language of the statute was far from conveying its actual meaning. Moreover, ship building conditions are very different now from what they were when the law was passed. The repeal of the statute was favored by nearly all of the seaboard ship builders and by a large number of ship owners engaged in the coasting trade.

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LAUNCH OF TWO STEAMERS.

MISS JULIA PAIGE NORTON.

The steel steamer David Z. Norton, building for Capt. W. G. Richardson and others of Cleveland, was successfully launched at the Cleveland yard of the American Ship Building Co. on Saturday morning last. The steamer was christened by Miss Julia Paige Norton, niece of the well known ore shipper in whose honor the steamer is named. At the conclusion of the launch luncheon was served to the launching party at the Colonial Hotel, speeches being made by Capt. W. C. Richardson, Mr. D. Z. Norton, Mr. C. O. Jenkins, Mr. Frank S. Masten and Mr. R. T. Gray. Those present were: Mr. and Mrs. David Z. Norton, Miss Julia Paige Norton of Toledo, Capt. W. C. Richardson of Cleveland, Mr. and Mrs. J. C. Siegel of Erie, Mr. and Mrs. R. T. Gray of Detroit, Capt. Thomas Wilford of Lorain, Mr. and Mrs. George Harrison, Miss Hemmegan, Miss Heffron, John Ashley, Mr. S. E. Stebbins, Mr. C. O. Jenkins, Mr. C. E. Richardson, Col. J. T. Kelly, T. H. Paine, D. W. Cheney, Capt. and Mrs. Thomas Jones, George M. Black, W. C. McMillan, Capt. J. J. H. Brown of Buffalo, Capt. M. Mills of Tonawanda, J.

MR. DAVID Z. NORTON.

J. Rardon of Chicago, J. A. Weisback of Buffalo, James McGiffert and Jay Amsden of Ashtabula, and W. S. Brainard of Toledo. The new steamer is 500 ft. over all, 480 ft. keel, 52 ft. beam and 30 ft. deep. She will have triple expansion engines with cylinders 22½, 36 and 60 in. diameters by 42 in. stroke. Steam will be supplied by two Scotch boilers 13 ft. 9 in. in diameter and 11½ ft. long, to be fitted with Ellis & Eaves induced draft. She differs from the usual type of vessel in the fact that her hatches are spaced 24 ft. centers and are 12 ft. fore and aft.

The Norton will be sailed by Capt. Thomas Wilford and James Falconer will be her chief engineer.

The steel steamer John Sherwin was launched on Saturday last at the West Bay City yard of the American Ship Building Co. and was named in honor of the Cleveland banker by Mrs. George M. Sherwin of Cleveland. The launch was successful in every way and was witnessed by Mr. J. D. Gilchrist, Mr. J. A. Gilchrist, Mr. and Mrs. George M. Sherwin, Mr. J. L. Weeks, Mr. Robert Logan, all of Cleveland and Supt. Frank Jeffery of Detroit. The new steamer is building for the Gilchrist Transportation Co., and will be sailed by Capt. W. G. Stewart. The Sherwin is 534 ft. over all, 514 ft. keel, 54 ft. beam and 31 ft. deep and is equipped with triple expansion engines and Scotch boilers.

CAPT. W. G. RICHARDSON.

OBITUARY.

Capt. J. P. Cottrell, local inspector of hulls at Detroit, died this week after an illness of several months. He was formerly a lake master and brought out a number of vessels.

Mr. George V. Sloat, since 1871 superintending engineer of the Old Dominion Steamship Co., of New York, died at his home in Rutherford, N. J., recently. He was born at New Rochelle, N. Y., in 1827.

The contract for constructing Revenue Cutter No. 15 has been awarded to the Pusey & Jones Co., Wilmington, Del., on its bid of $167,750.

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MERCHANT MARINE LEAGUE.

The merchant marine league of the United States is doing a great deal of educational work and is now contributing articles to nearly 500 newspapers throughout the United States. The purpose of these articles is to inform the public generally as to the status of the shipping question and need of governmental aid to the industry. Much interest has been manifested in the question throughout the country as is to be noted by the frequent action of the commercial bodies upon the subject. The shipping bill will be considered by the committee on merchant marine and fisheries of the house of representatives on March 22. The following resolutions were unanimously adopted on March 8 by the board of trustees of the Buffalo Chamber of Commerce:

The development of the American merchant marine as a means for the further growth of our foreign commerce has been most thoroughly investigated by the Merchant Marine Commission appointed under authority of an act of congress. The Merchant Marine Commission, after an exhaustive investigation and study of the subject, recommended the enactment of a bill known as the "Gallinger Bill," which recently passed the senate. Believing that the building up of an American merchant marine is essential to the further development of trade and commerce with foreign nations, and that the recommendations of the commission might safely be followed; therefore be it

Resolved, That the Chamber of Commerce of Buffalo recommends the speedy enactment of the Gallinger bill, and respectfully urges upon the members of congress from the city of Buffalo and the state of New York their hearty support to this measure; and be it further

Resolved, That a copy of this resolution be transmitted to the senators and representatives in congress from the state of New York.

Following is one of the semi-weekly bulletins issued from the headquarters of the Merchant Marine League in Cleveland:

SUBSIDIZED SHIPPING MEANS LOWER FREIGHT RATES.

That a subsidized American merchant marine would cause an immediate and permanent reduction in ocean freight rates, most people would not, at first thought, believe. Upon reflection, however, the logic of such a consequence, in theory, and its actual effect in concrete operation, would be demonstrated. The law of supply and demand is immutable. If there are a few carriers, the rates of freight are high; if there are many, the rates are low. With an increased number of ships offering for the cargoes that are to be carried, as would follow the creation of American ships under subsidy legislation, inevitably and immediately there would be a reduction in the rates made by the American ships in order to secure the carrying from the foreign ships now enjoying that carrying. The idea that American ships would demand, and that exporters and shippers would pay, greater freight rates to American ships for carrying cargoes than foreign ships would do the carrying for is, manifestly, absurd. And yet, if there has been one thought, more than another, hammered into the minds of the American people, by the people and the press who are opposed to subsidies to American ships, it is that obvious fallacy.

THE PROOF IS ABUNDANT AND CONVINCING.

All over the United States, today, the people find that when a new railroad parallels an existing line, a reduction in rates of transportation follows. If the price of a certain staple agricultural product is high it attracts farmers into planting their soil with that staple, and the increased competition reduces the cost. A manufacturer is successful in his particular line, and a competitor arises, and shares the profits, but only by reducing the cost to the consumers. The result is an increased product, a more liberal purchase by consumers, and subsequent profit to two where but one profited before. The same is true afloat. Where but one ship offers for two cargoes, the rate of freight is fixed by the ship owner, and it is high; where there are two ships offering for one cargo, the rate of freight is fixed by the shipper, and the rate is low. These facts are fundamental.

GERMANY'S EXPERIENCE WITH SUBSIDIES.

In 1886, for example, the German Government began subsidizing the North German Lloyd Steamship Company. The first year the total expense of the operation of the ships exceeded the receipts from all sources for the carriage of passengers and freight, by 1,601,039 marks, but the Government subsidy, which amounted to 1,571,712 marks, reduced the net loss for the year to but 29,327 marks. The second year, with the increased number of ships required and put into operation, the steamship company lost 5,778,034 marks more than it received from freight and passenger transportation, the subsidy from the Government still falling short, by 1,388,034 marks, of making good this loss. The third year the net loss to the company was 419,907 marks, although the receipts of the company included 4,355,446 marks in subsidy from the German Government. The fourth year the total of receipts, subsidy included, fell short 571,663 marks of meeting the expense. The fifth year the loss to the company amounted to 1,937,604 marks net, above all receipts from freight, passengers and Government subsidy, the latter alone amounting to 4,390,317 marks. The loss to the company in the three succeeding years, in expenses over receipts, the latter including the subsidies received from the Government, was 2,434,933 marks, although in the same period the company received subsidies from the Government amounting to 12,936,201 marks. In the entire eight years that the company operated its ships at a loss it received from the Government 32,036,545 marks in subsidies, and it lost a net sum of 6,781,468 marks—it paid out the last named sum in excess of what it received in freight, passenger, miscellaneous receipts and in Government subsidies.

EFFECT OF SUBSIDIES UPON GERMAN EXPORTERS.

In the first year there was no trade between Germany and the Orient, the part of the world to which the subsidized ships were to run. The second year (1881) the freight totaled 58,477 tons, valued at 74,515,000 marks, and in 1896, ten years after the line had been established, under subsidies, the freight totaled 166,575 tons, valued at 160,430,000 marks,—the freight increased threefold, at a double valuation. Since that time the German Government has been so well pleased with the results, in increased oriental markets for German products, that it has increased the subsidies, the steamship company increasing the number of its ships and the frequency of their sailings, with the result that there has been an enormous increase in German trade with the orient, so great an increase, in fact, wholly due to the subsidies given to the German steamship line by the German Government, as to alarm Great Britain, and to lead her manufacturers and her ship owners to suggest some measure of protection for Britons against the ruinous effects of this German competition. The ruinous effects are due to the lower freight rates made to German manufacturers by the subsidized German steamship line, freight rates far lower than competing subsidized British ships are able to make, and, were it not for the subsidies paid to the British competing line, it would be driven out of existence by the subsidized German line. The rivalry and the competition between the British and the German steamship lines inure to the advantage of German and British exporters, in that markets in distant parts of the world are opened for their products

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that would be closed to them were the lines not aided by the subsidies of their Governments and thus able to make lower rates of freight than ever before.

EARLY DAY EFFECTS OF SUBSIDIES TO AMERICAN STEAMSHIPS.

The first subsidies given to American steamships were provided for in an act passed over sixty years ago, during the administration of James K. Polk. Under that law, as amended in 1847, three lines of American steamships were established, two of which operated between Atlantic ports and northern Europe. The immediate effect of the establishment of the American lines was an enormous reduction in freight rates. They were at first cut in two by the competing subsidized British steamships, and subsequently they were cut in two again, so fierce was the rivalry, so determined was the competition. American ships first cut the rates, and then the British ships still further reduced rates, the advantage accruing to the American exporters, American producers were able to send abroad products that they had been denied a foreign market for, because of the high rates of ocean transportation. It is but little known in these days that, three years preceding the Civil War, American steam tonnage was greater than that of Great Britain, American steamships made the run between the United States and England in a day less than their swiftest competitors made it, American ships had the preference, were in the lead, were superior in every respect to their foreign competitors, and, all the while, American exporters were reaping great advantages in low freight rates from the operation of the competing subsidized steamships.

OUR TRADE ACROSS THE PACIFIC INCREASING.

In expectation of the passage of an American ship subsidy act, Americans a few years ago built quite a number of fine steamships in the United States, and these are being operated more largely upon the Pacific, their owners each pocketing large losses, but making rates of freight much lower to American shippers than they have ever before enjoyed, with the result that there has been a great increase in the volume of our exports to Japan, China, Australia and New Zealand. The fine line of swift American steamships running from San Francisco to Australia, although now enjoying an annual mail subsidy of $283,000, is suffering an annual loss of $371,000 in operating its ships, and its owners have stated that they will be forced to the wall, to give up their line, or to possibly sell out to the more enterprising Japanese, if some legislative relief in the way of increased compensation is not given. Meanwhile, the losses suffered by the owners of the line are favoring American exporters, who are finding increasing markets for their products, due to the low rates of freight made by the subsidized but unprofitable American steamship line. The abandonment of this line by its present owners would unquestionably greatly curtail if not wipe out our entire trade with Australia by way of Pacific ports. The increased freight rates exacted would put an end to the profit in the exportation, and the trade would cease, as far as we are concerned. These are matters well worthy the consideration of the American people, from a trade point of view, if from no other.

RETURN TO THE GOVERNMENT FROM SUBSIDIZING SHIPPING.

Some people think that there would be a dead loss if our Government were to subsidize its shipping. This is far from the truth. There would be a great gain, as has been shown, to the business men of the country. But where would the Government come in, may be asked? The return to the Government would come in through the usefulness of the ships, their trained and experienced shipmasters, officers and men, in time of need. In 1793, in a great state paper, Thomas Jefferson said:

"Our navigation involves still higher considerations; as a branch of industry it is valuable; but as a resource of defense, essential."

Note the significance of the last word in the quotation—"essential." That is the view held by all nations that subsidize their shipping—and the nations that do not subsidize their shipping have none. The ships and the men are an essential resource of the national defense, and on this ground alone, if for no other, our Government is justified in making any expenditure that may be necessary to secure merchant ships and seamen of our own. Very recently it has been pointed out by the chief officers of our army and our navy that a large number of ships, of varying sizes and speed, are essential to the successful prosecution of war, should we unhappily become involved in one across the seas. To leave ourselves without the essential means, the needed instrumentalities, for carrying on the war successfully, and with our commerce carried in their ships, arming and equipping our possible adversaries with those means which we have denied to ourselves the possession of, is to ignore our peril and court disaster.

It is said that Japanese ship owners are negotiating for the purchase of all of the American steamships plying across the Pacific. Is there a state, or a sinister, objective in this proposed purchase? Lacking ships of our own, might Japan not wrest from us the control of the Philippines, if it be true that she envies us our possession of those islands? As Jefferson truly said much more than a hundred years ago, but equally true today: "Our navigation involves still higher (than economical) considerations." Let us neither ignore nor forget these considerations.

CAPT. MALLORY PROMOTED.

Capt. George B. Mallory, after fifty years of service as master on the lakes, has been appointed shore captain for Pickands, Mather & Co. and will be ashore this year for the first time in half a century. During this long service Capt. Mallory's career has been unusually distinguished. Until seized with typhoid fever last fall and compelled to relinquish command of the steamer Amasa Stone, he had not lost a trip in forty-eight years. Capt. Mallory's advice has been much sought after, his employes frequently seeking his judgment in the rapid evolution which lake trade is undergoing. He will have charge of the fitting out of the new steamer which is now building for the company at the Wyandotte yard of the American Ship Building Co.

Capt. Mallory's first command was the scow Fairplay which he sailed in 1858. Other small vessels that he had charge of were the schooners Lima Rock, Mona, Seabird, Buckingham, Eliza Gerlach, Wm. Jones and Redwing. Capt. Mallory's first steamer was the V. H. Ketchum which, when she was launched in 1873, was the largest freighter on the lakes. The Ketchum was later converted into a schooner and ended her career on Lake Superior last season by fire. The Mariska, which came out in 1890, was the first steel steamer that Capt. Mallory sailed. Since that time, however, he has looked after the construction and fitting out of thirty steel steamers and has brought out more new steamers than any man in the business. He well deserves the rest that his employers have now seen fit to give him.

That freight traffic on the Lake Shore is enormous is indicated by figures just compiled, which show that 169 trains were moved between Buffalo and Cleveland in 24 hours this week. These were made up of a total of 8,640 cars, the previous best record being 7,273. The interchange record was also broken, 3,415 cars, as against 3,289, the previous largest number, being interchanged with other roads. The next day 6,418 cars were moved on the same division.

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APPOINTMENTS OF MASTERS AND ENGINEERS.

WILSON TRANSIT LINE, CLEVELAND, O.

Vessel.	Captain.	Engineer.
Str. Charles S. Hebard	W. W. Dawley	Fred M. Harmon
Str. Henry W. Oliver	C. H. Francke	F. C. Stoeber
Str. Capt. Thos. Wilson	J. S. Wood	W. E. Donovan
Str. Andrew Carnegie	Daniel Buie	J. F. Derrig
Str. W. D. Rees	E. R. Morton	C. Annable
Str. Yuma	John Milne	J. Heinkelmann
Str. Spokane	J. McArthur	C. Snyder

ALGOMA CENTRAL STEAMSHIP LINE, SAULT STE. MARIE, ONT. W. C. BARR, SUPT.

Str. Leafield	W. C. Jordan	James Cameron
Str. Paliki	Ben Garvie	James Gregg
Str. Theano	G. W. Pearson	J. L. Smith
Str. King Edward	Wm. Bemrose	Geo. Sylvester
Strs. Ossifrage & Minnie M	Ap'p'ts. not made	
Bge. Agawa	J. A. Slammon	Thomas Jones
Schr. Barlum	R. C. Irwin	
Tug Philadelphia	Ap'p'ts. not made	

R. O. & A. B. MCKAY, HAMILTON, ONT.

Str. Neepawah	O. Patenaude	Andrew Leitch
Str. Wahcondah	H. Zealand	Jas. Waller
Str. Strathcona	J. Irving	Wm. Harman
Str. Donnaconna	J. W. Mawdesley	J. S. Duguid
Str. Gohkie	H. N. McMaster	H. A. Deronin
Str. P. Marquette No. 2	John Malcolsom	Robert Mackie

KNUD, PEDERSON, BUFFALO, N. Y.

Bge. Commodore	K. Pederson	

W. H. SHARP, BAY CITY, MICH.

Str. J. P. Donaldson	Charles Rattray	John Fettig
Str. Maine	R. Burrington	Joe Gramson

MARQUETTE & BESSEMER DOCK & NAVIGATION CO., CONNEAUT, O.

Str. M. & B. No. 1	M. M. Rowan	Robert Leitch
Str. M. & B. No. 2 (car ferry)	R. R. McLeod	Eugene Woods

ANN ARBOR R. R. & S. S. CO., TOLEDO, O. H. W. ASHLEY, GEN. MNGR.

Str. Ann Arbor No. 1	A. L. Larsen	H. Grotemaut
Str. Ann Arbor No. 2	C. Frederickson	F. Russell
Str. Ann Arbor No. 3	F. A. Robertson	T. J. Harkins

MERCHANTS LINE, MONTREAL, CANADA. G. E. JACQUES & CO., MNGRS.

Str. City of Montreal	Arthur Lefebvre	Fred Hamelin
Str. Cuba	A. Manpetite	Jos. Belanger
Str. Bickerdike	Joseph McMaugh	Augene Hamelin

W. H. FOLLETTE, TONAWANDA, N. J.

Str. Jesse H. Farwell	David Curran	A. E. Rhodes

ERICK ERICKSON, RACINE, WIS.

Schr. J. A. Holmes	Capt. E. Erickson	

W. H. MEYER, MILWAUKEE, WIS.

Str. Christopher	W. E. Wright	S. Pratt

GEORGE D. JACKSON, BAY CITY, MICH.

Schr. G. K. Jackson	Curtin Jackson	

J. B. MILLER, TORONTO, CANADA.

Str. Seguin	James Nilsen	Chas. Robertson

W. H. LOUTIT, GRAND HAVEN, MICH.

Str. Pentland	T. McCambridge	Hugh Mulligan

A. C. WANWIG, CHICAGO, ILL.

Str. J. D. Marshall	A. C. Wanwig	Christ Dahl

J. M. SHACKETT, MANAGER, MARINE CITY, MICH.

Str. Faustin	P. L. Williamson	Arthur Dwight

ASHLEY & DUSTIN, DETROIT, MICH.

Str. Frank E. Kirby	A. J. Fox	Julius Holder

CAPT. A. T. MAY, DETROIT, MICH.

Str. Emerald	A. T. May	Wm. Galpin

BROWN STEAMSHIP CO., CLEVELAND, O. H. H. BROWN, PRES.

Str. Castalia	John F. Jones	Edw. Dempsey

E. T. CARRINGTON, BAY CITY, MICH.

Vessel.	Captain.	Engineer.
Tow Schr. Allegheny	W. H. Bridges	

MANITOU STEAMSHIP CO., CHICAGO., ILL.

Str. Manitou	Allan McIntyre	B. T. McCanna

INDIANA TRANS. CO., MICHIGAN CITY, IND.

Str. Theo. Roosevelt	Donald McLean	Chas. Warwick

GRAND TRUNK MILWAUKEE CAR FERRY CO., MILWAUKEE, WIS. R. G. BUTLER, MNGR.

Str. Grand Haven	Chas. A. Lyman	Eugene Scott

MICHIGAN STEAMSHIP CO., CHICAGO, ILL.

Str. Eastland	F. A. Dority	Wm. P. Eales

THOMAS MARKS & CO., PORT ARTHUR, ONT.

Str. Neebing	Capt. J. Ewart	A. F. Foote

WISCONSIN TRANSPORTATION CO., SHEBOYGAN, WIS.

Str. Brazil	R. Richoldt	A. J. Wilson

OHIO COOPERAGE TRANS. CO., CLEVELAND, O.

Str. Monohansett	D. A. Kendall	Mr. Robbins
Schr. Penobscot	G. Clausson	

THOMAS ADAMS, MNGR., MONROE TRANS. CO., DETROIT, MICH.

Str. George L. Craig	D. J. Duncanson	S. C. Staley

ADAMS TRANSPORTATION CO., DETROIT, MICH. THOS. ADAMS, MNGR.

Str. Thomas Adams	W. M. Mahon	T. J. McCabe

THOMAS ADAMS, DETROIT, MICH.

Str. Langham	David Wilson	Robt. L. Hains

C. C. BAUNHART, VERMILLION, O.

Schr. M. I. Wilcox	Wm. Somerville	

JAMES MCBRIER, ERIE, PA.

Str. Nyanza	W. Montgomery	Wm. Phillipie

NIAGARA TRANSIT CO., NORTH TONAWANDA, N. Y.

Str. Wm. A. Rogers	G. W. Honner	W. J. Cunningham

BIGELOW BROS. & WALKER CO., CHICAGO., ILL.

Str. Madagascar	Dorin Elliott	Chas. Nerritur

ALGER, SMITH & CO., DETROIT, MICH.

Str. Gettysburg	Wm. Jagenow	Wm. P. Wenner

M. M. DRAKE, BUFFALO, N. Y.

Str. Chili	W. T. Sutherland	E. T. Everill

MYLES TRANSPORTATION CO., LTD., NIAGARA FALLS, N. Y.

Str. Cataract	J. S. Moore	Peter Ryan

JAMES A. WHITE, NORTH TONAWANDA, N. Y.

Str. Three Brothers	Sam Christopher	George Gleath

LAKE SHORE SAW MILL & LUMBER CO., CLEVELAND, O.

Str. E. A. Shores, Jr.	Geo. F. Forrest	Not appointed

SEITHER TRANSIT CO., CLEVELAND, O.

G. J. Grammer	Jos. A. Powell	John Goulden

FRANK SEITHER, PRES., ENGLAND TRANS. CO., CLEVELAND, O.

Str. R. W. England	R. W. England	John Booth

N. D. CARPENTER, DETROIT, MICH.

Str. A. L. Hopkins	James Cassin	Jacob Zeh

HUGH R. HAVEY, DETROIT, MICH.

Str. Miami	H. Huyser	John Elsey
Str. W. P. Thew	Mr. Hedrick	D. Barrow
Schr. A. Gebhardt	Wm. Duncan	

LAKE TRANSIT CO., BUFFALO, N. Y. J. J. MCWILLIAMS, TREAS.

Str. Lackawanna	C. J. Graser	W. B. Lewis
Str. Scranton	H. W. Stewart	F. D. Frederick

W. D. MCMILLAN, MANAGING OWNER, DETROIT, MICH.

Str. Admiral	M. G. McIntosh	B. J. McCabe
Str. W. K. Bixby	J. H. Ivers	P. B. McCabe

NORTHERN STEAMSHIP CO., BUFFALO, N. Y. F. C. CRUGER, MNGR.

Str. North West	G. A. Minar	W. N. MacDonald
Str. North Land	J. J. Hartman	Geo. M. Tilton

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CLEVELAND & BUFFALO TRANS. CO., CLEVELAND, O. T. F. NEWMAN, MNGR.

Vessel.	Captain.	Engineer.
Str. City of Erie	Hugh McAlpine	J. Y. Rendall
Str. City of Buffalo	W. H. Smith	Chas. Lorimer

E. D. CARTER, ERIE, PA.

Str. Luzon	A. E. White	W. T. Taylor
Str. Panay	C. H. Wilson, Jr.	John Stevens
Str. E. D. Carter	C. H. Wilson	M. J. Kelley

SAGINAW BAY TRANSPORTATION CO., CLEVELAND, O.

Str. D. Leuty	Joseph Albano	J. D. Budd
Str. Rhoda Emily	W. Randall	W. Auhl
Bge. R. Bottsford	A. D. Sheldon	
Bge. Hattie	A. Papineau	

JAMES CORRIGAN, MANAGING OWNER, CLEVELAND, O.

Str. Australia	R. E. Donaldson	John Radford
Str. Bulgaria	M. L. Miner	Harvey Haynes
Str. Caledonia	J. N. Nicholson	Fred Craig
Str. Italia	A. E. McGregor	John Maxwell
Str. Iron Age	J. C. Hays	M. Good
Bge. Amazon	James O'Flynn	John Sandvich
Bge. Polynesia	A. D. McKay	Mr. Anderson
Bge. Iron Cliff	Martin Kurth	
Bge. M. W. Page	Arthur Adams	

JOHN CORRIGAN, CLEVELAND, O.

Str. Aurania	R. C. Pringle	E. S. Cleveland

R. C. BRITTAIN, SAUGATUCK, MICH.

Str. O. E. Parks	O. E. Parks	R. A. Elliott
Str. Frank Woods	C. B. Coates	Henry Bender
Str. J. S. Crouse	L. S. Brittain	Sam Johns

LOUIS SANDS SALT & LUMBER CO., MANISTEE, MICH. GEO. M. CLIFTON, SEC.

Str. Wotan	Jacob Berentsen	Wm. E. Brice
Str. Maggie Marshall	Andrew Olson	John Peterson
Schr. Isabella Sands	J. L. Jensen	
Schr. A. W. Luckey	Anton Erickson	
Schr. Arendal	Nels Thompson	

GUS KITZINGER, MANISTEE, MICH.

Pere Marquette No. 3	H. L. Sanders	Ed. Hineline
Str. P. Marquette No. 4	John Staffelbeam	J. A. Myers
Str. M. B. Corell	Ed. Skeels	Burt Randall
Str. John Schroeder	Ed. Staffelbeam	
Robert C. Wente	Gust Anderson	Herman Winkler
Str. Hattie		Chas. Christenson

ST. LAWRENCE & CHICAGO STEAM NAVIGATION CO., TORONTO, CANADA. H. HAGERTY, MANAGER.

Str. W. D. Matthews	James Ewart	E. J. O'Dell
Str. Iroquois	W. H. Wright	Wm. Harwood
Str. Algonquin	John Williams	J. W. Taylor
Str. Rosedale	Peter J. Shaw	James Findlay

BARRY BROS. TRANS. CO., CHICAGO, ILL. JOHN BARRY, PRES. & GEN. MNGR.

Str. Wisconsin	Thomas Barry	James Reid
Str. Empire State	Jos. Lamoreaux	Chas. Grobben

JOHN J. WARDE, CHICAGO, ILL.

Str. Niko	Thomas Beggs	Mr. Benham
Schr. Annie M. Peterson	Charles Bough	

S. O. NEFF TRANSPORTATION CO., MILWAUKEE, WIS.

Str. Lucy Neff	L. Holm	P. Keenan
Str. Adella Shores	S. Holmes	Not appointed

DETROIT & BUFFALO STEAMBOAT CO., DETROIT, MICH. W. C. MCMILLAN, MNGR.

Str. Eastern States	D. McLaughlin	J. P. Wells
Str. Western States	F. G. Stewart	A. Carter

J. E. BALL, BUFFALO, N. Y.

Str. P. P. Miller	F. Weinheimer	W. C. McDougall

W. H. HAVENS, ASHTABULA, O.

Str. George B. Raser	S. A. Cline	Ed. Ball

WM. LIVINGSTONE, DETROIT, MICH.

Str. Wm. Livingstone	James Doner	Richard Sutliff

HUTCHINSON & CO., CLEVELAND, O.

Str. Jos. G. Butler, Jr.	Wm. P. Benham	Robt. J. Smith
Str. John Stanton	S. B. Massey	W. J. Swaine
Str. Wm. A. Paine	C. H. Heaton	P. F. Lyons
Str. Martin Mullen	James Murphy	Walter G. Thorne

Vessel.	Captain.	Engineer.
Str. J. T. Hutchinson	J. M. Shackett	George Blauvelt
Str. City of Glasgow	E. Detlefs	Anton Rudd
Schr. Abyssinia	T. K. Woodward	

UNION STEAMBOAT LINE, BUFFALO, N. Y.

Str. Starrucca	James R. Gibson	A. A. Brown
Str. Ramapo	J. A. McDonald	H. Johnson
Str. Chemung	John C. Clarke	N. Johnson
Str. Oswego	Geo. W. Moore	James Tenant
Str. Tioga	T. R. Gebhard	Wm. Hayes
Str. Binghamton	Joseph Acton	John Cane

HOLLAND & GRAVES, BUFFALO, N. Y.

Str. Mohegan	Jas. Cunningham	Wm. Schumacher
Schr. Aloha, Schr. Mingoe	Wm. McCarter	
Schr. J. A. Francomb, Schr. Annabell Wilson	J. O. Roberson	

THE MICHIGAN STEAMSHIP CO., DETROIT, MICH., PHILLIP H. MCMILLAN, MANAGER.

Str. Colonel	A. Ames	August Cobo

THE J. EMORY OWEN TRANSPORTATION CO., DETROIT, MICH., R. T. GRAY, MANAGER.

Str. John Owen	H. T. Archer	S. L. Phillips

NORTHERN MICHIGAN TRANS. CO., CHICAGO, ILL.

Str. Missouri	Wm. Finucan	Thomas Collins
Str. Illinois	F. Richardson	P. Eustic
Str. Kansas		

THE NORTHERN NAVIGATION CO., OF ONTARIO, LTD., COLLINGWOOD, ONT. C. A. MACDONALD, LOCAL MNGR.

Str. Huronic	R. D. Foote	R. Brisbin
Str. Monarch	E. Roberts	Samuel Beatty
Str. Saronic	A. L. Campbell	Hugh Myler
Str. Majestic	G. H. Playter	Wm. Whipps
Str. Germanic	W. G. Cox	Joseph Asten
Str. City of Midland	A. M. Wright	Stephen Burgess
Str. Brittanic		Isaac Boyd
Str. City of Toronto	Paul Dusome	John T. Myler

KINSMAN TRANSIT CO., H. STEINBRENNER, MNGR., CLEVELAND, O.

Str. Philip Minch	Joseph Lampoh	Wm. H. Miller
Str. H. Steinbrenner	H. Gunderson	Otto Hoffman
Str. Anna C. Minch	L. B. Cummings	C. R. Price

W. C. RICHARDSON, CLEVELAND.

Str. David Z. Norton	Thos. Wilford	James Falconer
Str. W. C. Richardson	J. H. Babbitt	A. C. Bowen
Str. Roumania	B. R. Walker	George Miller
Str. Samuel Mitchell	Wm. Hagan	James Bennett
Str. J. H. Wade	P. H. Smith	John McMonagle
Str. J. H. Devereaux	C. C. Mason	Thomas Shannon
Str. Iroquois	E. J. Burke	L. Bowen
Str. Wm. Edwards	Chas. Ahlstrom	Moses Blondin
Schr. Chickamauga	H. W. Phillips	
Schr. Crete	Henry Larsen	
Schr. Mary B. Mitchell	J. McKeighan	
Schr. Golden Age	D. H. Stalker	
Schr. Iron Queen	D. A. Maynes	

DULUTH & ATLANTIC TRANSPORTATION CO., DETROIT, MICH. PHILIP H. MCMILLAN, MANAGER.

Str. Iron King	James Ross	A. E. Bury
Schr. Iron Queen	D. A. Maynes	

THE WOLVERINE STEAMSHIP CO., DETROIT, MICH. PHILIP H. MCMILLAN, MANAGER.

Str. Senator	W. A. Irvine	W. J. Dolton

G. A. TOMLINSON, DULUTH, MINN.

Str. Frank C. Ball	D. P. Craine	A. R. Fortier
Str. Hoover & Mason	W. D. Ames	F. G. Carey
Str. James E. Davidson	F. A. Fick	E. Mettetal
Str. Sylvania	J. W. Ehrhart	M. J. McAuliffe
Str. Socapa	W. G. Maltby	T. H. Welsh
Str. Ball Brothers	A. H. Reed	Robert Close
Str. Sahara	W. C. Brown	F. T. Goodwin
Str. Saxona	G. W. McCullagh	James Wilson
Str. Sonoma	Wm. B. Todd	B. St. Bernard
Str. Sinaloa	C. C. Tousley	W. A. Rehder
Str. Kensington	Frank Lewis	T. J. O'Connor
Str. Yosemite	E. W. Craine	W. H. Ballard
Str. Sonora	Jas. T. Weaver	Wm. Bridges
Str. Sultana	Geo. F. Loughin	W. M. McCarron

DETROIT & CLEVELAND NAVIGATION CO., DETROIT, MICH.

Str. City of Detroit	A. J. McKay	Wm. S. Huff

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Vessel.	Captain.	Engineer.
Str. City of Cleveland	A. McLaihlan	John T. Hall
Str. City of Alpena	M. Lightbody	A. Phillips
Str. City of Mackinac	F. J. Simpson	Wm. McDonald

CLEVELAND & TOLEDO LINE, DETROIT, MICH.

Str. State of Ohio	A. H. McLaehlan	David McDonald
Str. City of the Straits	Salem Robinson	Wm. Stein

TONAWANDA IRON & STEEL CO., NORTH TONAWANDA, N. Y.

Str. Fleetwood	J. R. Hesson	Harvey Depuy
Str. Eddy	J. L. McIntosh	E. H. Parry
Str. Oceanica	J. A. Fleck	R. Shinskey
Str. Clyde	Bert Ward	H. D. Fifield
Str. Vernoica	Chas. Christie	Abraham Wood
Str. Curtis	Frank Conlin	James Walsh
Str. Mercur	J. T. Kenny	J. A. Westrick
Str. Packer	George H. Lane	Fred Hebard
Bge. Pennington	Charles Hanley	
Bge. Moravia	P. Keischgens	
Bge. Holland	J. H. Christie	
Bge. Fassett	A. Mills	

ANCHOR LINE, ERIE & WESTERN TRANS. CO., BUFFALO, N. Y.

Str. Juniata	E. Martin	Wm. Wilson
Str. Tionesta	John Doherty	John Wise
Str. India	H. Cronkhite	J. Forrester
Str. Japan	J. J. Lehan	E. Stevenson
Str. Delaware	Chas. Christy	John Jordan
Str. Muncy	Charles Nelson	F. Rehbaum
Str. Codorus	I. Wright	T. Griffin
Str. Mahoning	H. O. Miller	A. Black
Str. Schuylkill	Jos. Corcoran	Wm. Garrity
Str. Susquehanna	A. McKenzie	A. Edgar
Str. Lehigh	F. Bloom	John Healy
Str. Clarion	G. J. Delaney	A. Welch
Str. Alaska	E. E. Loadwick	Charles Hull
Str. Conemaugh	M. Boggan	A. Fraser
Wissahickon	John McDonald	Wm. Erskine

J. S. ASHLEY, MNGR., MAHONING STEAMSHIP CO., CLEVELAND, O.

Str. Leonard C. Hanna	Edw. Sullivan	Frank Warner
Str. Powell Stackhouse	P. L. Millen	J. Groundwater

J. S. ASHLEY, MNGR., CALUMET TRANSPORTATION CO., CLEVELAND, O.

Str. George A. Flagg	A. McArthur	Wm. Miller
Str. R. S. Warner	M. Anderson	Aug. Romzick
Schr. S. D. Warriner	W. A. Black	
Schr. A. W. Thompson	F. C. Hart	

O. S. ASHLEY, MNGR., FRANKLIN TRANSPORTATION CO., CLEVELAND, O.

Str. Wm. Fitch	B. W. Lendfair	Grant Donaldson
Schr. A. Maitland	V. L. Hosner	

REPUBLIC IRON & STEEL CO., CLEVELAND, O.

Str. Republic	Wm. Megarvey	George Averice

MATHEWS LINE, TORONTO, CANADA.

Str. Haddington	James Delaney	Hedley R. Welch

J. C. MILLER, MARINE CITY, MICH.

Str. Rand	Wm. Booth	John Stevens

A. B. WOLVIN, MNGR., PEAVEY STEAMSHIP CO., DULUTH, MINN.

Str. Frank H. Peavey	A. G. Tappan	J. S. Patterson
Str. George W. Peavey	L. E. Boyce	A. L. Roberts
Str. F. T. Heffelfinger	John Tower	W. L. Sperry
Str. Frederick B. Wells	Alex. Craigie	Geo. A. Gardiner

THE LAKE TRANSIT CO., BAY CITY, MICH. H. L. SHAW, GEN. MNGR.

Str. City of Bangor	A. J. Mahon	W. C. Anderson
Str. Penobscot	W. A. Williams	E. A. Hoffman
Str. Selwyn Eddy	G. D. Tulian	W. P. Hoffman
Str. E. C. Pope	Forrest Moloney	Wm. C. Houston

WM. H. SANBORN, ALPENA, MICH.

Str. Alaska	Chas. Marscero	John Dishau

WEST DIVISION STEAMSHIP CO., CHICAGO, ILL. D. SULLIVAN & CO., MNGRS.

Str. Fred Pabst	John T. Hutton	James Rossan
Str. W. H. Wolf	Edward Fitch	W. J. Reardon
Bge. Armenia	Thomas Cooper	

WOLVERINE STEAMSHIP CO., DETROIT, MICH. PHILIP H. MCMILLAN, MNGR.

Str. Senator	W. A. Irvine	W. J. Bolton

MICHIGAN STEAMSHIP CO., DETROIT, MICH. PHILIP H. MCMILLAN, MNGR.

Vessel.	Captain	Engineer.
Str. Colonel	A. Ames	August Cobo

CENTRAL CANADA COAL CO., LTD., BROCKVILLE, ONT.

Str. Samuel Marshall	Henry Russell	H. I. Cerow

J. M. BALFOUR, MARINE CITY, MICH.

Schr. Uranus	J. M. Balfour	

THE CALVIN CO., GARDEN ISLAND, ONT.

Str. Simla	A. H. Malone	Robert Veech
Str. India	Charles Coons	Thomas Smith
Str. D. D. Calvin	H. N. Smith	John Kennedy
Str. Chieftain III	Not yet appointed	Thomas Gray
Str. Parthia	David Lefave	George Sauve
Str. Frontenac	C. E. Phelix	Matt. Dorey
Str. W. Johnston	John Harris	Evan Campeau
Str. Bluebell	John Dix	Benjamin Lappen
Schr. Burma	John Gerguson	
Schr. Ceylon	Joseph Achee	

SIDNEY SCOTT, MT. CLEMENS, MICH.

Schr. Algeria	M. Elnen	

BYRON WHITAKER, DETROIT, MICH.

Str. Byron Whitaker	James P. Stewart	Dexter Blauvelt

MACLACHLAN TRANS. CO., PORT HURON, MICH.

Str. C. F. Bielman	J. A. Montgomery	Harry La Hote
Schr. Mary McLachlan	Alex. Shanblean	

MIDLAND NAVIGATION CO., MIDLAND, ONT.

Str. Midland King	W. H. Featherstonbaugh	Ed. Abbey
Str. Midland Queen	Frank Burke	George A. Smith

MIDLAND TOWING & WRECKING CO., MIDLAND, ONT.

Str. Traveler	J. Tyndall	Frank Goodwin
Str. Magnolia	J. Clark	John Doran
Str. Metamora	Ed. Burke	Fred Chester
Str. Minitaga	George Kinnel	John Kinnel
Str. Menodora	Chas. Gould	Arthur Buff

J. R. FAIRGRIEVE & CO., HAMILTON, ONT.

Str. Arabian	Robert McMaugh	W. Cunningham

F. M. OSBORNE, CLEVELAND, O.

Str. John W. Moore	J. L. Bradshaw	E. R. Day
Str. Louisiana	Jas. H. Buchanan	H. Edmondson

JULIUS KROOS, SHEBOYGAN, WIS.

Str. Susie Chipman	N. A. Gunderson	R. J. Edwards

C. W. ELPHICKE & CO., CHICAGO, ILL.

Str. Wm. L. Brown	W. B. McDonald	S. C. Davis
Str. Mary C. Elphicke	Jos. Matthews	W. H. Walder
Str. G. Watson French	John Massey	D. W. Rice

M. J. CUMMINGS, OSWEGO, N. Y.

Str. Western Star	P. J. Griffin	Martin Griffin

LAKE ONTARIO & BAY OF QUINTE STEAMBOAT CO., KINGSTON, ONT.

Str. North King	John Jarrell	George Boyd
Str. Caspian	Wm. Bloomfield	O. J. Hickey
Str. Aletha	John A. Roys	

MARINE NAVIGATION CO., MICHIGAN CITY, IND. GEORGE G. OLIVER, MNGR.

Str. Francis Hinton	J. M. Campbell	Ed. Owen
Str. A. R. Colborn	Odin Larson	John H. Lutz

A. B. WOLVIN, MNGR., PROVIDENT STEAMSHIP CO., DULUTH, MINN.

Str. James H. Hoyt	W. A. McLeod	J. J. McCoy
Str. D. G. Kerr	E. D. Ballentine	W. A. Mondy
Str. James H. Reed	F. P. Houghton	Jas. A. McPhee
Str. D. M. Clemson	S. R. Chamberlain	Jay A. Popp

A. B. WOLVIN, MNGR., ACME STEAMSHIP CO., DULUTH, MINN.

Str. Aug. B. Wolvin	J. W. Norcross	Theodore Myers
Str. James C. Wallace	Frank C. Rae	Andrew Haas

GILBERT LA CROIX, MT. CLEMENS, MICH.

Str. A. D. Hayward	Joseph Inches	George Tromble
Str. Mascotte	Gilbert La Croix	Fred Pingle

M. SICKEN, MARINE CITY, MICH.

Str. George King	Wm. Burns	H. Manion
Str. M. Sicken	J. Kuhn	Robert Mann
Str. S. K. Martin	H. Brown	M. Owen
Schr. Teutonia	H. Lawrence	
Schr. Thomas Gawn	J. Lawrence	

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Vessel.	Captain.	Engineer.
Schr. D. Pendell	J. Chartran	
Schr. L. Rawson	O. W. Thompson	
Schr. C. Spademan	Charles Gullett	
Schr. Melvina	J. Bond	
Schr. E. J. McVea	J. Moses	
Schr. G. Whiting	J. Gilbert	
Schr. St. Joseph	M. Sicken	

W. N. KELLEY, TRAVERS CITY, MICH.

Str. Emma E. Thompson	Henry Bennett	Frank Kimber

PORT HURON & DULUTH STEAMSHIP CO., PORT HURON, MICH.
C. O. DUNCAN, T. M.

Str. Russia	J. C. McLean	Wm. Brown
Str. New York	Alex. McCowan	No appointment

CANADA ATLANTIC TRANS. CO., MONTREAL, P. Q.
W. H. SMITH, MNGR.

Str. George N. Orr	Wm. Baxter	H. H. Evans
Str. Arthur Orr	H. Jaenke	John Murnan
Str. Kearsarge	John McNeil	A. A. Manion
Str. Ottawa	Alex. Birnie	Wm. Paus

PERE MARQUETTE STEAMSHIP CO., MILWAUKEE, WIS.
E. F. BLOMEYER, PRES. AND GEN. MNGR.

Str. Pere Marquette	J. C. Ackerman	Robert MacLaren
Str. Pere Marquette 17	Joseph Russell	A. W. Ackerman
Pere Marquette 18	P. Kilty	Charles Sylvester
Pere Marquette 19	W. H. La Fleur	Albert Cascadden
Pere Marquette 20	Geo. L. Thompson	J. B. Conrad

MINNEAPOLIS, ST. PAUL & BUFFALO STEAMSHIP CO., BUFFALO, N. Y. J. C. MCLAY, GEN. AGENT.

Str. Minneapolis	Walter Robinson	D. J. McMillan
Str. St. Paul	Peter Thompson	Henry Stone
Str. Huron	Neil Anderson	Alexander Adams
Str. Sm. Castle Rhodes	George W. Crawford	G. A. Hemenger

THOMAS MONROE, MUSKEGON, MICH.

Str. George C. Markham	Anton Christensen	Ambrose Smith
Schr. Lyman M. Davis	Hans Hermanson	

PICKANDS, MATHER & CO., CLEVELAND, O. (MNGRS. FOR BOSTON COAL DOCK & WHARF CO.)

Bge. Santiago	P. Cartright	

PICKANDS, MATHER & CO., CLEVELAND, O.
(MNGRS. MESABA STEAMSHIP CO.)

Str. Victory	D. H. Mallory	Edgar Arnold
Bge. Constitution	Harry Howard	

PICKANDS, MATHER & CO., CLEVELAND, O.
(MNGRS. HURON BARGE CO.)

Str. Pathfinder	P. A. Peterson	H. A. Woods
Bge. Sagamore	J. D. McPherson	

PICKANDS, MATHER & CO., CLEVELAND, O.
(MNGRS. MESABI STEAMSHIP CO.)

New Str.—unnamed	L. W. Stone	A. Arnold
Str. Amasa Stone	W. A. Reed	C. A. Heisner

EUGENE M. CARLETON, CLEVELAND, O.

Str. H. D. Coffinberry	Wm. Furgeson	Dan Conway

ARNOLD TRANSIT CO., MACKINAW ISLAND, MICH.
GEORGE T. ARNOLD, MNGR.

Str. Chippewa	Wm. McCarty	John Lowery
Str. Elva	W. J. Stewart	John Harrington

ARNOLD LINE, MACKINAW ISLAND, MICH.
GEORGE T. ARNOLD, MNGR.

Str. Islander	John McCarty	Martin Bake

L. R. BOYNTON, MNGR., ISLAND TRANSPORTATION CO., ST. IGNACE, MICH.

Str. Algomah	N. W. Boynton	R. McLaughlin
Str. Duluth	A. R. Graves	Not appointed
Str. Wau-Kon	L. Goodman	Not appointed

O. E. PARKS, MICHIGAN CITY, IND.

Str. O. E. Parks	Oscar E. Parks	Robert Elliott

MANISTEE, MARQUETTE & NORTHERN RAILWAY CO., MILWAUKEE, WIS.

Vessel.	Captain.	Engineer.
Str. M. M. & N. No. 1	W. P. Robertson	Joseph Taylor

HOPE TRANS. CO., DETROIT, MICH. J. A. FRANCOMBE, MNGR.

Str. W. R. Stafford	John Rathburn	J. A. Francombe

LEHIGH VALLEY TRANS. CO., BUFFALO, N. Y.

Str. Tuscarora	W. Williams	R. Fraser
Str. Saranac	J. H. McDonald	H. Willson
Str. Seneca	C. E. Fuller	J. Halldin
Str. Bethlehem	A. A. McMaugh	W. C. Gilbert
Str. Wilkesbarre	D. Driscoll	J. Laehy
Str. Mauch Chunk	C. S. Furey	D. H. Fox
Steam Lighter Batavia	H. Hill	J. T. Mann

OGDENSBURG COAL & TOWING CO., OGDENSBURG, N. Y.

Str. Nicaragua	James Owen	Freeman Axtell
Str. Avon	George P. Clifford	D. G. Costello
Tug George D. Seymour	P. J. McGrath	Thomas O'Neill
Tug Megra	James Martin	Frank Norris
Bge. Witbeck, Henry	J. Mallett, Sr.	
Bge. Fred Carney	Timothy Hunt	
Bge. Hoboken	Adelon Demars	
Bge. Menominee	J. Mallett, Jr.	
Bge. James Buckley	A. Derocher	
Bge. "H B"	Alfred Lalonde	

U. S. TRANSPORTATION CO., CLEVELAND, O.

Str. L. C. Smith	E. T. Rottray	George Milne
Str. Hurlbut W. Smith	Alex. Forbes	Edward H. Reading
Str. Wm. Nottingham	Sidney Le Beau	John Courtney
Str. George B. Leonard	George W. Pierce	Wm. Beckbissinger
Str. Monroe C. Smith	Charles D. Woodward	H. J. Gregg
Str. Lyman B. Smith	Frank Boyer	John Davidson
Str. Horace S. Wilkinson	A. W. Stalker	Malcolm McNeal
Str. Wilbert L. Smith	Harvey L. Mills	Joseph Taylor
Str. Charles M. Warner	F. H. Reid	Ben. Hinslea
Str. W. W. Brown	Wm. McAlpine	John Churchill
Str. A. G. Brower	Wm. H. Blattner	John A. Schirg
Str. Wm. H. Gratwick	F. C. Folsom	Allen Landsphere

LYMAN C. SMITH TRANS. CO., CLEVELAND, O.

Str Lyman C. Smith	J. H. Driscoll	Wm. Roach
Str. Harry Coulby	Ralph J. Lyons	E. Hull

COWLE TRANSIT CO., CLEVELAND, O.

Str. John B. Cowle	C. Z. Montague	Charles Coushane

L. R. BOYNTON, MNGR., MACKINAC TRANS. CO., ST. IGNACE, MICH.

Str. Sainte Marie	Mr. McDowell	R. Walsh
Str. Sainte Ignace	B. Boynton	Joseph Rosseau

WM. E. PIERCE, WEST BAY CITY, MICH.

Str. Ogemaw	Wm. E. Pierce	Aaron P. Hagadon
Schr. Clarence J. Fillmore	John Haggerty	
Schr. Katie Brainard	Wm. Haggerty	

CAPT. J. B. HALL, BUFFALO, N. Y.

Str. New Orleans	P. O'Neill	P. F. Conniff

W. P. REND, CHICAGO, ILL.

Str. Wm. P. Rend	E. Evans	
Str. Panther	John Crangle	T. Hogan

CAPT. W. J. WILLOUGHBY, GODERICH, ONT.

Str. Benton	W. J. Willoughby	Richard Baxter
Str. Rube Richards	O. E. Bullock	Not yet appointed
Bge. May Richards	O. E. Bullock	

LOUIS F. DRIESKE & CO., CHICAGO, ILL.

Schr. Ford River	Peter Hansen	

SYLVESTER BROS., TORONTO, CANADA.

Schr. St. Louis	George Williamson	

M. J. LYNN, MNGR., BAY CITY, MICH.

Str. Lizzie Madden	M. J. Lynn	G. McLennan

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GREEN BAY TRANSPORTATION CO., GREEN BAY, WIS.

Vessel.	Captain.	Engineer.
Str. Eugene C. Hart	C. A. Graves	Joseph Prevat
Str. Fannie C. Hart	J. W. Carrigan	Charles Dennis

T. HURLEY, 149 JEFFERSON AVE., DETROIT, MICH.

Str. Majestic	Harry C. McCallum	George Purvis
Schr. Monguagon	H. H. Pope	

CHARLES S. NEFF, MILWAUKEE, WIS.

Str. Charles S. Neff	John A. Doak	S. L. Newnham

JOHN PRINDIVILLE & SON, MNGRS., CHICAGO, ILL.

Str. Winnebago	Thomas J. Moran	Fred Otto
Str. Jesse Spalding	James Travis	Thomas H. Ward

GRACE HARBOR LUMBER CO., DETROIT, MICH.

Str. Tempest	Wm. P. Quinlan	Wm. Hamilton
Bge. C. G. King	James Hamilton	

CAPT. JOHN C. PRINGLE, ST. CLAIR, MICH.

Str. Isabella J. Boyce	John C. Pringle	Charles Schunk

MITCHELL & ROWLAND LUMBER CO., TOLEDO, O.

Str. Sachem	H. R. Moore	Thomas Leitch
Schr. George B. Owen	Nels Johnson	

S. P. CRANAGE, BAY CITY, MICH.

Str. Thomas Cranage	John S. McNeill	Wm. Nerreter
Str. City of Paris	L. H. Powell	David N. Humphrey

HENRY MCMORRAN, PORT HURON, MICH.

Str. Gogebic	James S. Neal	
Str. Pawnee	George Tremble	
Str. Britannic	Ezra H. Davis	

GEORGE ENGELKING, CHICAGO, ILL.

Str. T. S. Christie	P. Larsen	Henry Gibson

OLEY GROH, SHEBOYGAN, WIS.

Tug Satisfaction	Wm. Groh	Joseph Ritchie
Schr. Quickstep	Wm. Lorenz	

WORLD'S LARGEST SHIPS.

In view of the paragraphs which have recently appeared on the subject of the largest steamers in the world, the following table, giving the dimensions of the world's ten largest ships either in course of construction or already running, may be of interest:

Name of steamer	Gross tonnage	Length over all Feet	B'dth over all Feet	Depth m'l'd Feet
*Mauritania	33,200	787½	88	60½
*Lusitania	33,200	787½	88	60½
†Kaiserin Auguste Victoria	25,000	727½	77½	54
‡Adriatic	25,000	727½	75½	49
‡Baltic	23,875	727½	75½	49
†Amerika	22,250	690	74½	53
‡Cedric	21,035	700	75½	49
‡Celtic	20,904	700	75½	49
*Caronia	19,594	675	72½	43¾
*Carmania	19,524	675	72½	43¾

* Cunard ‡ White Star † Hamburg-American

All the vessels named have twin screws and reciprocating machinery except the Cunard liners Mauritania, Lusitania and Carmania, which are turbines. The Carmania has triple screws, and the two other Cunarders named—which are those being constructed under the company's contract with the British government—will have four screws.

DOCK YARD EXTENSION AT PORTSMOUTH.

The present board of admiralty in Britain have decided to maintain the forward policy of their predecessors, and have adopted practically in toto the big scheme for dock yard extension at Portsmouth, which was under consideration of the admiralty board in the closing days of the late government. It is proposed to spend a sum of $12,500,000 in bringing the establishment thoroughly up-to-date in every respect, and much of the money will figure in the coming naval estimates. By the expenditure of so large a sum, it is evident that the admiralty intend to maintain Portsmouth as the premier state ship building and repairing yard, and the policy has given the liveliest satisfaction at Portsmouth where the recent discharge of 1,500 men had caused much distress and bad trade. A fine engineering shop, covering an acre of ground, has already been completed, and the new capital expenditure of $12,500,000 will be chiefly devoted to four objects, viz.: the building of two new docks, the extension of the building from which the Dreadnought was launched, and the construction of a second hauling-up slip for small craft. In addition, but under a separate estimate, a floating dock for submarines is to be built and stationed in Haslar creek, the waterway of the new submarine depot at Portsmouth. The construction of the new works will extend over two years at least. The need of new dry docks has been made apparent by the giant size of the Dreadnought, which is too big for all but one of the 15 docks at Portsmouth. This dock she nearly fills, being 520 ft. long, and 82 ft. wide, while the dock is only 563 ft. long. The Dreadnought's stem almost touches the head of the dock, and the stern the caisson. Of the remaining fourteen docks, only three are capable of taking the biggest cruisers of the Drake class which are nearly 500 ft. long. As there is likely to be a succession of Dreadnoughts and improved Dreadnoughts, the need of more than one dry dock is pressing, and the admiralty have decided that the two new docks to be constructed on spare land near the big engineering shop on the east side of the yard shall not only be larger than the dock in which the Dreadnought is now having her armor belt affixed, but also capable of taking the biggest ship likely to be constructed for some years ahead. For like reasons the launching slip is to be extended by 100 ft. to 700 ft. over all, or 180 ft. longer than the Dreadnought. To make room for the extended ways, the somewhat obsolete armor plate shop and contiguous buildings are to be demolished. The new hauling slip is for destroyers and torpedo boats. By these new works, and the installation of up-to-date electrically worked machine tools, Portsmouth will be easily able to carry out her permanent new construction program, that is, to add one new battleship a year to the British fleet. One vessel will be on the building slip while the other is undergoing completion in dock.

PERSONAL.

George Simpson, naval architect, Mariners' Harbor, Staten island, has obtained a patent on a submarine vessel.

Sadler, Perkins & Field, have designed a twin-screw kerosene lighter 80 ft. long, 27 ft. beam and 8 ft. 8 in. deep.

L. J. Wing, the marine gasoline engine builder, has organized the Wing Mfg. Co., with offices at No. 136 Liberty street.

Capt. Frank Morrison, of Cleveland, the well known compass adjuster, addressed a meeting of ship masters at Detroit last week.

James S. Stirling, formerly president of the Samuel L. Moore & Sons Co., Elizabeth, N. J., has been appointed superintendent of the Helles & Jones Co.

Mr. Frank A. Jones, of San Francisco, president of the Marine Engineers' Beneficial Association, is now making a tour of the great lakes. In an interview at Duluth he stated that the association had no grievances whatever this year.

The $50,000,000 syndicate which was organized nearly four years ago by the J. P. Morgan Co. to float the bonds of the International Mercantile Marine Co., has been dissolved with, it is understood, a considerable loss to the bankers who participated in the syndicate.

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AROUND THE GREAT LAKES.

The new steamer Harry Coulby, building at Detroit, will be launched on March 20.

The Lake Carriers' lightship Kewaunee will go on her station at Southeast Shoal, Point Au Pelee, Lake Erie, on April 1.

Capt. Dennis Sullivan of Chicago, will manage the fleet of the Great Lakes & St. Lawrence Transportation Co. this season, succeeding Mr. A. B. Wolvin.

Capt. L. W. Stone, of Vermillion, will bring out the new steamer building at the Wyandotte yard of the American Ship Building Co. for Pickands, Mather & Co. of Cleveland.

The steamer Raleigh is undergoing extensive repairs at the yard of the Manitowoc Dry Dock Co., Manitowoc, Wis. The steamer John B. Cowle and the steamer Langham are also being repaired at this plant.

The Port Huron & Duluth Steamship Co. has purchased the steamer New York from the Union Steamboat Co. of Buffalo. The New York will go into the package freight business between Port Huron and Duluth.

The annual report of Capt. C. H. Westcott, supervisor of steamboats for the western district, shows that during 1905 11,217,567 persons were carried on steamers on the great lakes. Of this number Detroit boats carried 6,795,437.

Mr. Frank E. Kirby announces that he will be ready to submit the specifications for the new Detroit & Cleveland liner to the ship yards shortly. He has been delayed in doing so by work upon the new steamer that he is designing for the Hudson River Day line.

The United States government keeps a considerable fleet of tugs, dredges and scows at Toledo. The assembly of them at the east end of the Cherry street bridge in the Maumee river where they are now fitting out makes the place look like a ship yard.

One thousand feet of new seawall is soon to be constructed along San Francisco water front. The cost of this new and important work, will be paid out of the money derived from the sale of the $250,000 of bonds, which were recently declared valid by the supreme court of California.

The fleet of the Kingston & Montreal Forwarding Co., with headquarters at Portsmouth, has been purchased by the Montreal Transportation Co. It is now understood that the Montreal Transportation Co. is in full control of the grain barge carrying trade of the river between Kingston and Montreal.

When the new 602-ft. steamer building at the West Bay City yard of the American Ship Building Co. is launched, the people of Bay City will probably give the event social importance by projecting a banquet in honor of the ship building company. This would really be a graceful tribute to a company that has done much for Bay City by maintaining a great industry there.

The trouble between Capt. Lysaaght and the life-saving crew at Big Point Sable a few miles north of Ludington which culminated last fall in the government sending a special officer to make an investigation, has been settled by the department at Washington ordering the captain to engage an entirely new crew this season. The order completely exonerated Capt. Lysaaght.

Capt. James Reid of the Reid Wrecking Co., of Sarnia, is now preparing to arrange the steamer Mataafa which was sunk in Duluth harbor. A preliminary examination has been made of the craft, but Capt. Reid declines to make any statement about her condition. The steamer is broken in two a little after amidships and the first thing to do in salving the vessel will be to bulkhead the break. Her ore cargo will then be taken out of her.

The little wooden steamer Desmond cleared from Cleveland on March 8 with a cargo of coal for J. N. Mullen Co. of Windsor. The boat was in command of Capt. Dixon who sheltered her near Kelley's island during the night and got away early the next morning. The Desmond dodged a number of ice fields and landed her cargo safely at Detroit.

At the recent sale of the property of the Pittsburg & Morgantown Packet Co., Pittsburg, G. C. Burgwin, representing the Marine National Bank secured the steamer Columbia for $19,225. Geo. W. Theis, representing the Monongahela River Consolidated Coal & Coke Co., was the highest bidder on the other steamers, securing the Dewey for $4,025; Rose Hite, $675 and I. C. Woodward, $6,000. The boats were sold by United States Marshal Stephen P. Stone to satisfy libels filed against the packet company.

The Gillen Wrecking Co., of Racine, Wis., recently asserted that Canadian wrecking outfitters are barred by law from conducting operations in American waters but upon inquiry by marine underwriters the contention has been discovered to be incorrect. The issue was raised by the Gillen Wrecking Co.'s complaint against the Reid Wrecking Co. while working on the steamers Argo and D. M. Whitney on Lake Michigan. There is a reciprocal arrangement between the two countries in the matter of rendering assistance to wrecked vessels.

General Manager B. W. Parker, of the White Star line, General Superintendent A. A. Schantz, of the Detroit & Cleveland line, Capt. Simmons, of the Detroit & Buffalo line and Capt. Nicholson, of the Detroit, Belle Isle & Windsor Ferry Co., went to Washington this week to discuss with their representatives the bill introduced in congress providing that 75 per cent of the crew of passenger steamers shall be able bodied seamen. This is one of the measures drawn as the outcome of the Slocum disaster. Such a measure if made general in its application to all parts of the country would necessarily work great injustice to certain parts. There are numerous runs on the great lakes which do not require any such proportion of able bodied seamen aboard.

Notice has been received by the local Southern Pacific passenger department that after today the passenger service between New Orleans and Havana will be discontinued on the Southern Pacific line of steamships because of the quarantine regulations which go into effect March 15. Officials of the state of Louisiana have declared a six-day quarantine against southern and Latin-American ports, effective March 15, and the fact that this quarantine goes in effect on the date mentioned is advanced as a reason why the Southern Pacific Co. should discontinue passenger service. Whether or not the other lines operating between southern ports and Havana will follow suit as regards their passenger service between the two ports has not been announced.

A determined movement in behalf of labor is being made in New York to compel the government to build a second battleship at the Brooklyn navy yard. It has become necessary to discharge about 1,200 men who were employed on the battleship Connecticut and 1,000 more will be relieved when the vessel goes into commission. Various labor organizations, concerned in ship building, are circulating petitions to assign a second battleship to this yard. The movement is a well organized one, but congress may demur, as the cost of building the Connecticut at the Brooklyn yard was considerably in excess of the Louisiana building at the yard of the Newport News Ship Building & Dry Dock Co.

The citizens of Colorado will contribute a silver service to the armored cruiser Colorado.

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MARINE TYPE DIRECT CURRENT MULTIPLE ENCLOSED ARC LAMP.

The annexed illustration shows a new lamp manufactured by the General Electric Company, Schenectady, N. Y., which is identical in construction with the standard General Electric closed base enclosing globe type of edgewise wound direct current multiple lamp but is provided with a new marine outer globe and marine guard, and with a special supporting bail for the enclosing globe.

DIRECT CURRENT MULTIPLE ENCLOSED ARC LAMP. (Marine type.)

The superiority of the parallel rod, indestructible edgewise wound, direct current mutiple lamp is well known.

These lamps are only 26½ in. long over all, and are therefore suitable for installation where the lamps are required to be as short as possible consistent with the use of a 12-in. upper carbon. The marine guard is of heavy construction, affording ample protection against breaking of the globes. These features adapt the lamp to the lighting of firerooms and other places where the ceilings are low and where unprotected lamps of standard dimensions would be liable to mechanical injury.

THE IRENE BREAKS THE RECORD.

The trim and handsome four-masted schooner Irene, which plies between San Francisco and northern waters, very recently broke the record as to sailing time on a voyage up the coast.

She made the distance from San Francisco to a point off the light station on Cape Flattery in 3 days and 20 hours. This beats the average time made by steamers. However, this sailing time has been beaten but not for a great many years. By common consent, among all of the Pacific coast "skippers," the Irene is entitled to "carry the broom,"—which she does very proudly. The distance is reckoned at about 1,400 miles—as it is sailed.

THE AMERICAN SHIP.

Why should senators waste time over the question whether the Gallinger bill for the restoration of the American ship to its old place on the ocean is a subsidy or a bounty, or a measure analogous to the land reclamation act, or what not?

Open the way for the American flag to its proper place at the front of the world's carrying trade, and call it a subsidy or by any other name.

Redeem our one great national failure, and call the redemption fee a bounty if you will.

Rehabilitate the American merchant marine, and compare the process to the land reclamation legislation, or to anything else in sight.

The people are not afraid of the word "subsidy," or of any other word that may be used to describe the method of assuring that restoration and revival which President Roosevelt had in view when he said to Congress:

"To the spread of our trade in peace and the defense of our flag in war a great and prosperous merchant marine is indispensable. We should have ships of our own and seamen of our own to convey our goods to neutral markets, and in case of need to re-enforce our battle line."

Let us have them. Let the lack of them no longer disgrace this nation.—*New York Sun.*

COL. KINGMAN TO BE TRANSFERRED.

Vessel men in general learn with regret that Lieut. Col. Dan C. Kingman is to be transferred from Cleveland to Savannah. Col. Kingman has been in the lake district for the past five years with headquarters at Cleveland and has had charge of important construction work at a number of Lake Erie ports. Under his supervision the Cleveland harbor has been vastly improved and he possesses most comprehensive views for its further development. His work has been characterized by breadth and thoroughness and lake men are sorry indeed to lose him. Col. Kingman's future work will be at Savannah, where he will have charge, not only of river and harbor improvements, but of fortifications as well. He will have charge of a district extending from Baltimore, Md., to St. Augustine, Fla.

LIEUT. COL. DAN C. KINGMAN.

MEAN STAGES OF WATER.

The gauge records of the United States Lake Survey show the following mean stages of water above mean sea level, for February, 1906.

	Stages during February. Feet.	Higher than during same month last year, Feet.	Higher than during February, 1895, Feet.
Lake Superior	602.46	0.33	0.18
Lake Michigan	580.66	0.45	0.86
Lake Huron	580.69	0.39	0.85
Lake Erie	571.92	0.61	0.92
Lake Ontario	246.35	0.76	1.96

Present fall Lake Huron to Lake Erie, 0.22 foot less than year ago.

The Hills-McCanna Co., Incorporated, have taken in the business of Robert E. Hills and will continue it on the same lines as it has been in the past in connection with its steam specialties. The officers of the company are: Robt. E. Hills, president and treasurer; B. T. McCanna, vice president; George C. Karme, secretary and Thomas A. Delaney, superintendent.

Morgan Bros. Co., Seattle, Wash., were the lowest bidders by $5,000 on repairing lightship No. 50. The other bidders were: Willamette Iron & Steel Co., $19,825; Hall Bros., Seattle, $22,795; Roberts & Co., Portland, $23,780 and R. H. Toller, Portland, $25,100.

The American Steamship Association was organized in New York by a number of coastwise steamship lines recently for the purpose of protection. President W. L. Guilladeu, of the Old Dominion line was elected president.

The two Cunard express liners, now building under governmental assistance, will be named Lusitania and Mauritania.

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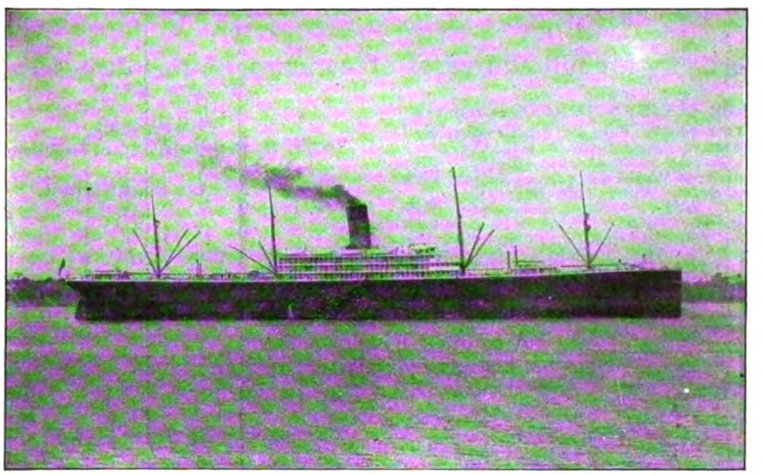
Hyde Windlasses and Capstans



Steamship Minnesota equipped with Hyde Windlass and Capstans.

Selected for the Minnesota and Dakota of the Great Northern Steamship Co.'s fleet—the largest vessels ever built in the United States. They are also being installed on nearly all of the vessels now building for the Navy Department, Revenue Cutter service, Lighthouse Board and the United States Coast Survey.

Reason—Their Superiority

Send for Illustrated Catalog.

HYDE WINDLASS COMPANY

BATH, MAINE

Geo. L. McCurdy

169 Jackson Boulevard

CHICAGO ILLINOIS

INSURANCE

HULLS and CARGOES

DIRECT REPRESENTATIVE OF LEADING AMERICAN AND FOREIGN UNDERWRITERS

THE
BOURNE-FULLER CO.
IRON STEEL
PIG IRON
COKE
Cleveland, Ohio.

The Williams & Rodgers Co.

EUCLID & PROSPECT AVES.—ARCADE

CLEVELAND, O.

We make a specialty of fitting out Boats

For 15 years we have enjoyed a very large trade in this line, and are better prepared to handle it than others who do not particularly feature it.

We know how to do it. Come to us for pointers.

The Williams & Rodgers Co.

New location 100 to 104 Euclid

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Buyers' Directory of the Marine Trade

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See accompanying index of Advertisers for full addresses of concerns in this directory.

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Great Lakes Engineering Works.....Detroit.
Mietz, Aug. .....New York.

AIR PORTS, DEAD LIGHTS, ETC.
Marine Mfg. & Supply Co.....New York.

AIR PUMPS AND APPLIANCES.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.

ANCHORS.
Bowers, L. M. & Co.....Binghamton, N. Y.

ANTI-FRICTION METALS.
Cramp, Wm. & Sons.....Philadelphia.

ARTIFICIAL DRAFT FOR BOILERS.
American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit
Great Lakes Engineering Works.....Detroit

ASH EJECTORS.
Great Lakes Engineering Works.....Detroit.

ATTORNEYS AND PROCTORS IN ADMIRALTY.
Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Jenkins, Russell & Eichelberger....Cleveland.
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MacDonald, Ray G.....Chicago.
Shaw, Warren, Cady & Oakes.....Detroit.
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BAROMETERS, MARINE GLASSES, ETC.
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Boston & Lockport Block Co....Boston, Mass.
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BLOWERS.
Power Specialty Co.....Detroit.

BOAT BUILDERS.
Drein, Thos. & Son.....Wilmington, Del.
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Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co....St. Joseph, Mich.
Willard, Chas. P. & Co. Winthrop Harbor, Ill.

BOILER CLEANING DEVICE.
Power Specialty Co.....Detroit.

BOILER COMPOUNDS.
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American Ship Building Co.....Cleveland.
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Chicago Ship Building Co.....Chicago.
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Dearing Water Tube Boiler Co.....Detroit.
Detroit Ship Building Co.....Detroit.
East End Boiler Works.....Detroit.
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Fore River Shipbuilding Co.....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Kingsford Foundry & Machine Works...
.....Oswego, N. Y.
Maryland Steel Co.....Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher Water Tube Boiler Co....New York.
Newport News Ship Building Co.....
.....Newport News, Va.

BOILER MANUFACTURERS—Continued.
New York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.
Quintard Iron Works Co.....New York.
Roberts Safety Water Tube Boiler Co....
.....New York.
Stirling, The Co..... New York.
Superior Ship Building Co.....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.

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Bourne-Fuller Co.....Cleveland.

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Lunkenheimer Co.....Cincinnati.

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Scherzer Rolling Lift Bridge Co.....Chicago.

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Brown Hoisting & Conveying Machine Co.
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CAPSTANS.
American Ship Windlass Co..Providence, R. I.
Dake Engine Co.....Grand Haven, Mich.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.

CEMENT, IRON FOR REPAIRING LEAKS.
Smooth-On Mfg. Co.....Jersey City, N. J.

CHAIN CONVEYORS, HOISTS.
Brown Hoisting Machinery Co. (Inc.)....
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Republic Belting & Supply Co.....Cleveland, O.

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CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.
Ritchie, E. S. & Sons.....Brookline, Mass.

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Pittsburg Coal Co.....Cleveland.

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..... Cleveland.

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Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Great Lakes Dredge & Dock Co.....Chicago.
Hickler Bros.....Sault Ste. Marie, Mich.
Hubbell Co., H. W.....Saginaw, Mich
Lake Superior Contracting & Dredging Co.,
..... Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H..Milwaukee.
Sullivan, M.....Detroit.

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CORK JACKETS AND RINGS.
Armstrong Cork Co.....Pittsburg, Pa.
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CRANES, TRAVELING.
Brown Hoisting Machinery Co.....Cleveland.

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DREDGING MACHINERY.
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DRY DOCKS.
American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co....Superior, Wis.
Tietjen & Lang Dry Dock Co.....Hoboken, N. J

DREDGE BUILDERS.
Manitowoc Dry Dock Co.....Manitowoc, Wis.

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General Electric Co.....Schenectady, N. Y
Mietz, Aug.....New York.
Thropp & Sons, John E.....Trenton, N. J.

ELECTRIC HOISTS AND CRANES.
General Electric Co.....Schenectady, N. Y.

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WANTED and FOR SALE Department.

PROPOSALS.

U. S. Engineer Office, Detroit, Mich., March 10, 1906 Sealed proposals for dredging Rouge River, Mich., will be received here until 3:00 P. M., April 10, 1906, and then publicly opened. Information furnished on application. CHARLES KELLER, Capt., Engrs.

FOR SALE.

FOR SALE.

One combination Clamshell and Dipper Dredge. Machinery for clamshell dredge. A dipper dredge partly burned. Deck scow 112 x 32 x 9. Tug—14 x 16. Several dredge dippers. Three 100 yd. dump scows. Miscellaneous appliances. Office with safe and fixtures, all to be closed out cheap.

CARKIN, STICKNEY & CRAM,
DETROIT, MICH.

For Sale.

Five Scotch Boilers, allowed 160 lbs. steam. Good as new. ERIE MACHINERY CO., 729 Garfield Bldg., Cleveland, O.

For Sale Cheap.

Schooner Minnie Slauson, rate A2 and in good condition. Address all communications to CAPT. L. E. LARSON, Manitowoc, Wis.

FOR SALE.

For Sale.

Square fire box marine boiler. Built 1898, 8 ft. 6 in. wide, 13 ft. long. Allowed 130 lbs. pressure. American inspection. For further particulars apply to F. E HALL, Trenton, Ont., Can.

Tug for Sale

A harbor and towing tug; engines 20 by 22; draft 6 ft. forward, 10 ft. aft. The boiler, hull and house brand new. In perfectly good condition, ready for immediate service.
The Ford River Lumber Co , Wells, Mich.

Small Steam Barge for Sale.

We offer for sale at a bargain, a Steam Barge, carries 250 tons.
Address HOLMES BROS., Redwood, N. Y.

A Bargain.

Steamer E. F. Gould, length 137 ft., width 28 ft , depth 8 ft. 5 in , tonnage 261 tons. Boiler, engine and hull in good condition. First-class, complete sand pumping outfit now installed on boat, will sell with boat if so desired. Apply JOHN M. McKERCHEY, Detroit, Mich.

For Sale.

Steamer Columbia, length 115 ft., beam 21 ft. Steamer Crescent, length 80 ft., beam 16 ft. For further information apply to C. A. Webb, Traverse City, Mich.

WANTED

Wanted.

to purchase Tow Barge having carrying capacity of 800 M lumber. Must be in good condition and light draft. Address F. E. Hall, Trenton, Ontario.

Wanted

Ore tow barge about 500 to 700 tons capacity on 10 ft. draft. Send full particulars and cash price. Capt. Vict Robinson, Chatham, Ontario.

Wanted.

Wanted to charter, with option of purchasing, a propeller or side wheel steamer 120 to 130 ft. keel, 5 to 5½ ft draft. Capacity 200 passengers and 50 to 60 tons freight. Address
TURBINE STEAMSHIP COMPANY, Hamilton, Canada.

Engine Wanted.

Steeple compound engine; cylinders 9 and 18 by 14 in. stroke. Engine must be as good as new. In reply state price. Address Lock box 22, Cheboygan, Mich.

WRECKING.

Wrecking.

The powerful ice-breaker Algomah lies at dock at St. Ignace under constant steam ready for a call on the lakes at any moment.
ISLAND TRANSPORTATION CO., St. Ignace, Mich. L. R. Boyton, Mgr.

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Buyers' Directory of the Marine Trade.—*Continued.*

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General Electric Co.....Schenectady, N. Y.
Mietz, Aug. .....New York.
Thropp & Sons, John E.....Trenton, N. J.

ENGINE BUILDERS, MARINE.
American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Chicago Ship Building Co.....Chicago.
Chase Machine Co.....Cleveland.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Shipbuilding Co....Quincy, Mass.
Great Lakes Engineering Works.Detroit, Mich.
Hall Bros. .....Philadelphia.
Lockwood Mfg. Co.....East Boston, Mass.
Maryland Steel Co.....Sparrows Point, Md.
Mietz, Aug.....New York.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Moulton Steering Engine Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
New York Shipbuilding Co....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co...
..... Duluth, Mich.
Quintard Iron Works Co.....New York.
Roach's Ship Yard.....Chester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G.....Buffalo.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.
Cory, Chas. & Son.....New York.
Marine Mfg. Supply Co.....New York.

ENGINEERING SPECIALTIES AND SUPPLIES.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Northwestern Steam Boiler & Mfg. Co...
..... Duluth, Minn.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.
Hynd, Alexander .....Cleveland.
Hunt, Robt. W. & Co.....Chicago.
Kidd, Joseph.....Duluth, Minn.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Roelker, H. B. .....New York.
Wood, W. J. .....Chicago.

FEED WATER PURIFIERS AND HEATERS.
Greacen-Derby Engineering Co.....
.....Perth Amboy, N. J.
Ross Valve Co.....Troy, N. Y.

FIXTURES FOR LAMPS, OIL OR ELECTRIC.
General Electric Co.....Schenectady, N. Y.

FORGES.
Sutton Co., C. E.....Toledo, O.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.
Cleveland City Forge & Iron Co...Cleveland.
Fore River Shipbuilding Co.....Quincy, Mass.
Macbeth Iron Co.....Cleveland.

FLUE WELDING.
Fix's, S. Sons.....Cleveland.

FUELING COMPANIES AND COAL DEALERS.
Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co.....Toledo, O.
Parker Bros. Co., Ltd.....Detroit.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Smith, Stanley B., & Co.....Detroit.

FURNACES FOR BOILERS.
Continental Iron Works.....New York.

GAS BUOYS.
Safety Car Heating & Lighting Co..New York.

GAS AND GASOLINE ENGINES.
Chase Machine Co.....Cleveland.

GAUGES, STEAM AND VACUUM.
Lunkenheimer Co. .....Cincinnati.

GAUGES, WATER.
Lunkenheimer Co. .....Cincinnati, O.

GENERATING SETS.
General Electric Co.....Schenectady, N. Y.

GRAPHITE.
Dixon Crucible Co., Joseph..Jersey City, N. J

GREASE EXTRACTORS.
Greacen-Derby Engineering Co.....
.....Perth Amboy, N. J.

HAMMERS, STEAM.
Chase Machine Co.....Cleveland.

HEATING APPARATUS.
Sutton Co., C. E.....Toledo, O.

HOISTS FOR CARGO, ETC.
American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co. (Inc.)....
..... Cleveland.
Chase Machine Co.....Cleveland.
Dake Engine Co.....Grand Haven, Mich.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Hyde Windlass Co.....Bath, Me.
Marine Iron Co.....Bay City.
Mietz, Aug. .....New York.

HOLLOW SHAFTINGS, IRON OR STEEL.
Falls Hollow Staybolt Co...Cuyahoga Falls, O.

HOLLOW STAYBOLT IRON.
Falls Hollow Staybolt Co...Cuyahoga Falls, O.

HYDRAULIC DREDGES.
Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.
Watson-Stillman Co., The.....New York.

ICE MACHINERY.
Great Lakes Engineering Works.....Detroit.
Roelker, H. B.....New York.

INJECTORS.
American Injector Co.....Detroit.
Jenkins Bros. .....New York.
Lunkenheimer Co.....Cincinnati.
Penberthy Injector Co.....Detroit, Mich.

INSURANCE, MARINE.
Elphicke, C. W. & Co.....Chicago.
Fleming & Co., E. J.....Chicago.
Gilchrist & Co., C. P.....Cleveland.
Hawgood & Co., W. A.....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co.....Cleveland.
McCarthy, T. R.....Montreal.
McCurdy, Geo. L.....Chicago.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Peck, Chas. E. & W. F..New York & Chicago.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.

IRON CASTINGS.
Sutton Co., C. E.....Toledo, O.

IRON ORE AND PIG IRON.
Bourne-Fuller Co.....Cleveland, O.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.
Truscott Boat Mfg. Co.....St. Joseph, Mich.

LIFE PRESERVERS, LIFE BOATS, BUOYS.
Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, D.....New York.

LIGHTS, SIDE AND SIGNAL.
Russell & Watson .....Buffalo.

LOGS.
Nicholson Ship Log Co.....Cleveland.
Walker & Sons, Thomas....Birmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.
Dixon Crucible Co., Joseph..Jersey City, N. J.

LUBRICATORS.
Lunkenheimer Co. .....Cincinnati

LUMBER.
Martin-Barriss Co.....Cleveland.

MACHINISTS.
Chase Machine Co.....Cleveland.
Hickler Bros.....Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.

MACHINE TOOLS (WOOD WORKING).
Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.
Hickler Bros.....Sault Ste. Marie, Mich.

MARINE RAILWAYS, BUILDERS OF.
Crandall & Son, H. I.....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.
Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.
American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.

METALLIC PACKING.
Katzenstein, L. & Co.....New York.
The National Metallic Packing Co....Oberlin, O.

MOTORS, GENERATORS—ELECTRIC
General Electric Co.....Schenectady, N. Y.

NAUTICAL INSTRUMENTS.
Benjamin Farnum How.....Boston
Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.
Hynd, Alexander .....Cleveland.
Kidd, Joseph .....Duluth, Minn.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Wood, W. J. .....Chicago.

OAKUM.
Stratford, Oakum Co.....Jersey City, N. J.

OIL ENGINES.
Mietz, Aug. .....New York.

OILS AND LUBRICANTS.
Dixon Crucible Co., Joseph..Jersey City, N. J.
Standard Oil Co.....Cleveland.

PACKING.
Jenkins Bros. .....New York.
Katzenstein, L. & Co.....New York.
The National Metallic Packing Co....Oberlin, O.
Republic Belting & Supply Co.....Cleveland, O.

PAINTS.
Baker, Howard H. & Co.....Buffalo.
Upson-Walton Co. .....Cleveland.

PATTERN SHOP MACHINERY.
Atlantic Works, Inc.....Philadelphia.

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